The Milbank Memorial Fund

QUARTERLY

CONTENTS

	Page
In This Issue	305
Population Problems of Palestine *Frank W. Notestein and Ernest Jurkat*	307
Medical Evaluation of Nutritional Status xvi. Essential Nutrients in Diets of High School Students According to Sex and Age and for Different Cultural Groups in New York City *Dorothy G. Wiehl and Katharine Berry*	353
Social and Psychological Factors Affecting Fertility iv. Developing the Schedules, and Choosing the Type of Couples and the Area to Be Studied *P. K. Whelpton and Clyde V. Kiser*	386
Annotations	
An American Dilemma — *Clyde V. Kiser*	410
Race Suicide? — *Warren S. Thompson*	414
Index	417

Vol. XXIII OCTOBER 1945 No. 4

Edited by the Technical Staff

Published quarterly by the MILBANK MEMORIAL FUND, 40 Wall Street, New York 5, New York. Printed in the U. S. A. Subscription: $1.00 a year.

IN THIS ISSUE

At a time when the discussions of future Palestine are in process it is appropriate to consider the fundamentals of the demographic situation of that region, more especially in view of the fact that so much of the popular discussion of the issues rests on the need for solutions of tragic problems outside Palestine rather than on the situation in Palestine and the implications of proposed solutions for that country. In an article from Princeton University's Office of Population Research, "Population Problems of Palestine," Drs. Frank W. Notestein and Ernest Jurkat present data on recent trends in growth and density of population; age structure; birth rates, death rates, and natural increase; immigration; and internal migration. The authors suggest that the demographic situation indicates a course of action between those proposed on the one hand by the Zionists and on the other hand by the Arab nations. For the welfare of all concerned, the authors believe it indispensable that Palestine be developed as a joint enterprise by both Jewish and Arab groups.

• • •

Large differences in nutrient values for diets of three groups of high school students in New York City are reported in the article entitled "Essential Nutrients in Diets of High School Students According to Sex and Age and for Different Cultural Groups in New York City" by Dorothy G. Wiehl and Katharine Berry. This report continues the series from an investigation on Medical Evaluation of Nutritional Status. Pupils from families of relatively high incomes attending a private school had diets which furnished, on the average, much greater amounts of protein, iron, calcium, vitamin A, and ascorbic acid than the diets of either Jewish or Italian pupils from low-income families. The Jewish diets gave higher values than the Italian diets for protein, iron, calcium, and ascorbic acid but lower values for vitamin A. The higher vitamin A

value for Italian diets was due entirely to a relatively high consumption of fruits and vegetables rich in carotene or provitamin A.

• • •

With grants from the Carnegie Corporation of New York, the Milbank Memorial Fund has been sponsoring the work of the Committee on the Study of Social and Psychological Factors Affecting Fertility. Two types of field work have been carried out in Indianapolis: (1) a city-wide canvass of white families for the purpose of locating couples eligible for (2) an intensive study of cultural and motivational factors in relation to number and spacing of children. Three reports on this study have been published in previous issues of the *Quarterly*. These related primarily to materials collected in the preliminary household survey. The fourth report appears in this issue and introduces the intensive study. Prepared by P. K. Whelpton and Clyde V. Kiser and entitled "Social and Psychological Factors Affecting Fertility. IV. Developing the Schedules, and Choosing the Type of Couples and Area to be Studied," this article explains the general purpose and scope of the intensive study and describes the development of the research instruments and the interviewing techniques that were used.

POPULATION PROBLEMS OF PALESTINE[1]

FRANK W. NOTESTEIN AND ERNEST JURKAT

TWO recurrent themes intertwine themselves throughout any demographic analysis of Palestine. The first is that the basic situation is the one typically found in colonial areas; fertility remaining high, the speed of population growth depends primarily on the level of the death rate. The second is that powerful demographic forces have been set in motion by Jewish migrants bearing Western culture, capital, and ideals of political nationalism. It is the impact of this dynamic Western group on the older culture that raises at once hopes and fears for an ultimate solution in a pattern of great complexity. The demographic analysis of Palestine is throughout merely an examination of these interacting forces.

In principle, the basic situation is clear enough. By the end of the First World War the indigenous population had reached a relatively high density in view of its economic resources as developed by somewhat primitive techniques under a backward government. Growth apparently was not very rapid, for high birth rates were heavily cancelled by very high death rates. Modern influences introduced by Western government and Western immigrants in the interwar period brought a substantial decline in the death rate. Meanwhile, as always in such circumstances, the birth rate reacted rather little. The inevitable result was a period of very rapid natural increase, developed at a time of heavy immigration. Only in the speed of transition are the processes involved different from those of other undeveloped regions being opened to modern influences. In such situations the population always grows because of the ready response of the death rate to improved sanitation and rising levels of living, and the inertia of the birth rate. Palestine's situation was abnormal only in the fact that the impact of modernization was intense and the decline of mortality sharp. The inevitable result

[1] From the Office of Population Research, Princeton University.

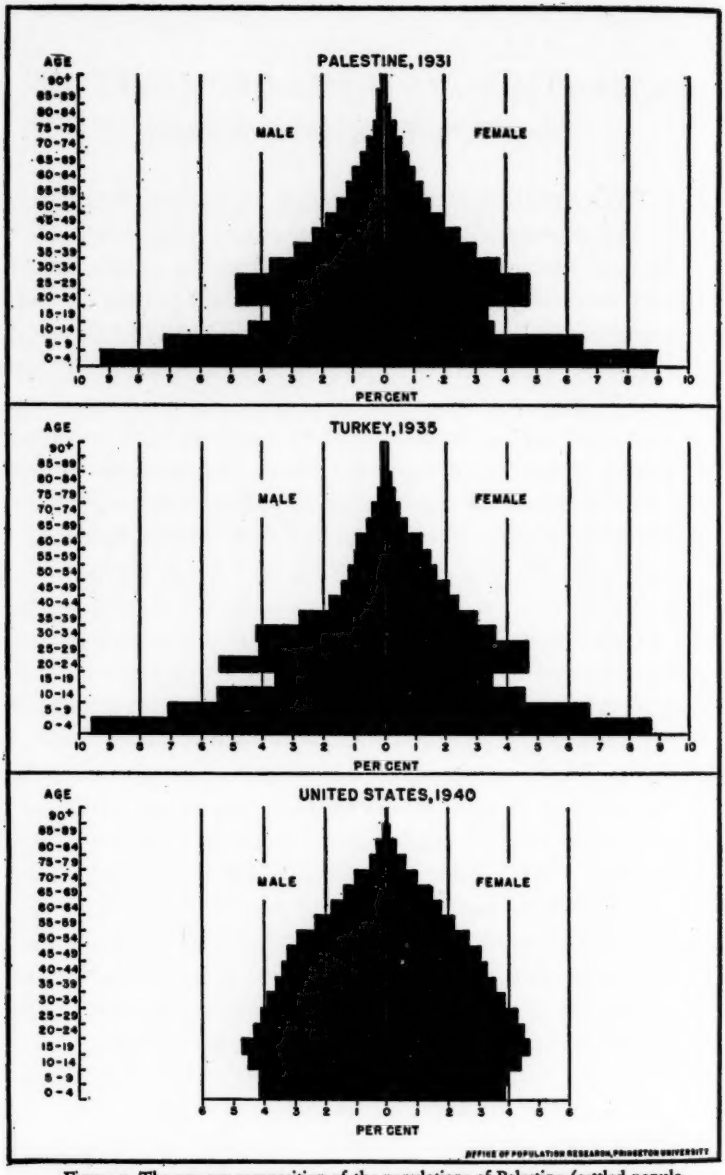

Figure 1. The age-sex composition of the populations of Palestine (settled population), 1931; Turkey, 1935; and the United States, 1940. (The distributions for Palestine and Turkey have been graduated to eliminate concentrations on round numbers.)

was the launching of an epoch of rapid growth in the indigenous population.

Something of the capacity of Palestine's population for growth may be seen from its age distribution which, together with the distributions for Turkey and the United States, is shown in Figure 1. In the pyramids each bar represents an age group with the males to the left and the females to the right, the ages being arrayed in ascending order. The length of each bar represents the per cent which the population of that age-sex group forms of the total population, so that the sum of all bars equals 100.

The pyramid for Palestine is strikingly similar to that for Turkey. Both of the distributions are broadly based and narrow rapidly with advancing years. The shape is characteristic of growing populations with high death rates. Apart from the groups reduced by catastrophes, every age group was smaller at birth than its successor, and has since been further depleted by high mortality for an additional five years. Catastrophes such as that of the First World War, which reduced births and raised child mortality, introduce notches such as that at age 15-19.[8] In Palestine immigration has swelled the groups from 20-50, and in Turkey emigration has reduced the males in the thirties and war casualties have cut into the numbers of males 35-40. In both Palestine and Turkey large numbers of survivors at age 90+ reflect merely the exaggerated reporting of illiterate oldsters. The actual proportions were certainly less than in the United States, where there is also some exaggeration. Unfortunately no age distribution of Palestine's population is available for years later than 1931. Since then, however, numbers in the young adult and middle ages of life have been swelled by substantial immigration.

It is immediately apparent from Figure 1 that the populations of

[8] Probably in Palestine and certainly in Egypt this notch is in part the result of underenumeration and biased age reporting. In Palestine there is no earlier age distribution to compare with 1931, but in Egypt other censuses show that the notch is not completely real. *See* Kiser, Clyde V.: "The Demographic Position of Egypt," DEMOGRAPHIC STUDIES OF SELECTED AREAS OF RAPID GROWTH. New York, Milbank Memorial Fund, 1944, pp. 97-122.

Turkey and Palestine, as contrasted with the population of the United States, have the potentialities for very rapid growth. For them, it is only necessary to reduce the death rate to reasonable proportions to bring a sharp rise in the number of people that reach childbearing age and contribute to the birth rate. In the United States death rates are already low, and moreover fertility prior to 1940 had dropped so low that the number of births became progressively smaller after 1920-1925. For some years growth of the childbearing groups in the United States will be checked as large groups leaving the childbearing period are replaced by small ones already born. In Palestine, on the other hand, at present births are maintained by large numbers of immigrants concentrated in the childbearing ages. As these pass out of the childbearing period, there will be a brief dwindling of numbers, and then, given even modest declines in mortality, the breeding stock will again increase rapidly. Hence age distributions of Palestine's type mean that the introduction of adequate sanitation and the general improvement of health will initiate a period of rapid growth.

The length of the epoch of growth and the manner of its termination depend on future events. If birth rates prove highly resistant to change, so that growth is rapid and sustained (as it was in Europe for more than two centuries), then very rapid economic development would be required to raise or even maintain levels of living in the face of such growth. If such progressive economic development is impossible, because of the paucity of resources, inadequate capital and techniques, or disturbed political conditions, then ultimately growth will absorb product, living levels will fall, and death rates will rise. The termination of growth would then come about in a highly congested, desperately poor population with high birth and death rates, in a situation not different in principle from that in which Egypt finds itself today. The difficulty facing all densely settled areas having high birth and death rates is clear-cut in Palestine.

If, on the other hand, the processes of modernization of both culture and economy move swiftly, so that the transition from high to low birth and death rates is relatively short (perhaps a century or less), then possibly growth can be held within the bounds of carrying capacity. The presence of an immigrant group bearing Western culture, technology, and capital, and particularly Western small family patterns, greatly enhances the possibility of curtailing the growth period. However, the effect can be obtained only if the immigrant group does not itself build up heavy population pressure. This it could do in two ways: one, by its sheer size in relation to the carrying capacity of the region; and the other, by stimulating a cultural and political clash of sufficient magnitude and duration to block the rapid and prolonged development of the economy.

It is the purpose of this article, first, to document the general course of development described above by considering the demographic structure and processes of recent population change, and then to examine the potentialities for future growth of the present stock and the implications of those potentialities for future policy toward migration.

The Composition of the Population

Palestine is a densely populated region, particularly in view of its climatic conditions and resource base. In spite of the fact that almost half of its area is virtually uninhabited desert, the average density of the settled population, i.e. excluding nomads, by the end of 1940 was 56 persons per square kilometer. This figure is about the same as that for Yugoslavia in 1931. It is a little higher than that for Greece and a little lower than that for Bulgaria or Roumania in the early 'thirties. If the desert subdivision of Beersheba is excluded from the area, Palestine's average population density was about 108 at the end of 1940, a figure a little higher than that for Czechoslovakia or Switzerland, and substantially higher than that for

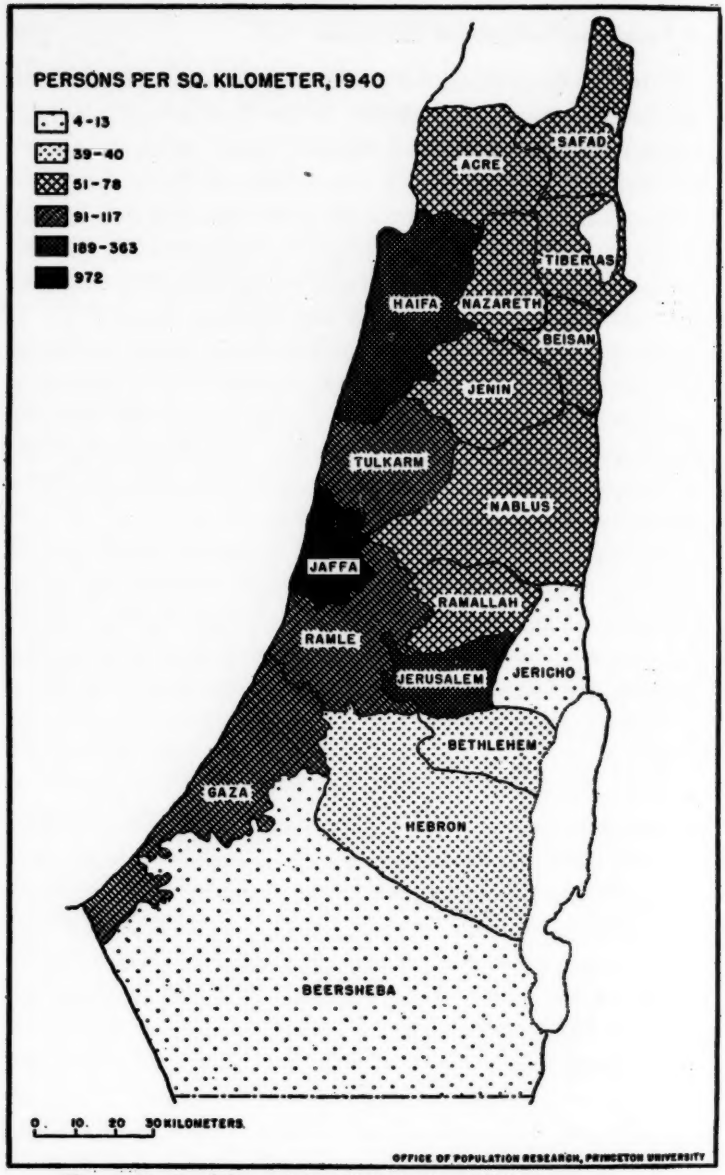

Figure 2. Density of the population of Palestine, by subdivisions, 1940.

Poland, Austria, Denmark, Hungary, or North Ireland in the early 'thirties.

Within the region, the density varies widely with climate, topography, resource-location, and degree of modernization. Figure 2 presents the situation for the end of 1940. It is apparent that Jaffa, Jerusalem, and Haifa, subdivisions of modern development, were very densely settled. They are essentially metropolitan regions, but the whole coast is rather densely populated. Moreover, the population density was rising rapidly between 1931 and 1940. For example, it increased from 93 to 190 persons per square kilometer in Haifa, from 56 to 76 in Nazareth, from 60 to 78 in Tiberias, and from 38 to 54 in Beisan. Further south, the density rose from 434 to 972 in Jaffa, from 87 to 117 in Ramle, and from 79 to 100 in Gaza. Truly sparse populations are found only in the desert sections, and some of these were filling up as reclamation projects pushed ahead. It is evident that a highly specialized and capitalized economy is necessary to support such dense settlement at reasonable standards of living.

The impact of the new on the old, evident in the pattern of rising density between 1931 and 1941, appears in virtually every demographic index. It is reflected clearly in the religious composition of the population. In 1931, the indigenous population was composed of a solid core of Moslems supplemented by a smaller proportion of native Jews, Christians, and other sects. The native Christians have been augmented by government officials and the staffs of Western churches at the holy places to form a somewhat heterogeneous group.[8] The Jewish group includes some indigenous population, but it is largely composed of recent immigrants from Europe. In 1931, 73 per cent of the total population was Moslem, 17 per cent was Jewish, 9 per cent Christian, and 1 per cent the affiliates of other religions.

[8] Because the Christians are a heterogenous group of native and Western peoples, the small number of persons of "other religions" have been consolidated with the Christians instead of with the more homogeneous Moslems whom in many respects they resemble in demographic behavior.

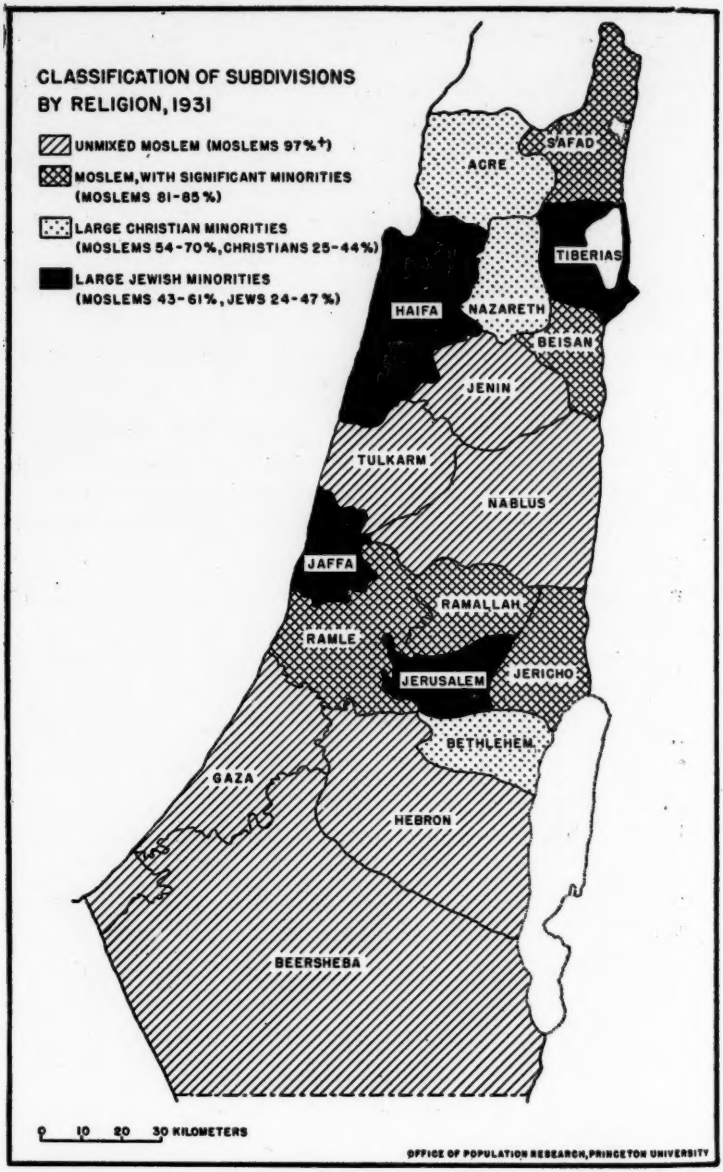

Figure 3. The subdivisions of Palestine classified by the religious affiliation of the population in 1931.

The distribution of the minority populations may be taken as a rough index of the diffusion of Western influences throughout the population. For lack of a census after 1931, the religious composition of subdivisions is not shown for later years, but as Figure 3 shows, in 1931 there was no single subdivision where the Jews formed a majority of the population. However, Jews formed significant minorities, ranging from 24 to 47 per cent, in Haifa, Tiberias, Jaffa, and Jerusalem. Christians formed substantial proportions (25 to 44 per cent) in Acre, Nazareth, and Bethlehem, and significant non-Moslem minorities (14 to 19 per cent) were found in the subdivisions bordering those with heavy Jewish concentrations, including Ramle, Ramallah, and Jericho in the Jaffa-Jerusalem belt, and Safad and Beisan bordering on Tiberias. The remainder of Palestine includes two belts of almost solidly Moslem population, that of the south—Beersheba, Gaza, and Hebron; and that of the middle region—Tulkarm, Nablus, and Jenin. In each of these six subdivisions the non-Moslems constituted less than 3 per cent of the total populations.

The Jewish and Christian populations were heavily concentrated in the cities, whereas the Moslem population lived chiefly in the villages. In 1931 about three-quarters of both the Jews and the Christians lived in incorporated places, which had attracted only about one-quarter of the Moslems. This urban concentration is inadequately measured by the census, which defines "urban" as incorporated places. Thus, on this definition, Jericho subdivision has no urban population. However, as Figure 4 shows, in three of the four subdivisions having substantial Jewish minorities, 40 per cent or more of the population was urban in 1931. At the other extreme, in three of the six solidly Moslem subdivisions, the urban population constituted less than 12 per cent of the total.

The census of 1931 did not give the proportion of the foreign born in the population of subdivisions. However, using the estimated distribution of the urban foreign born by religion, and the

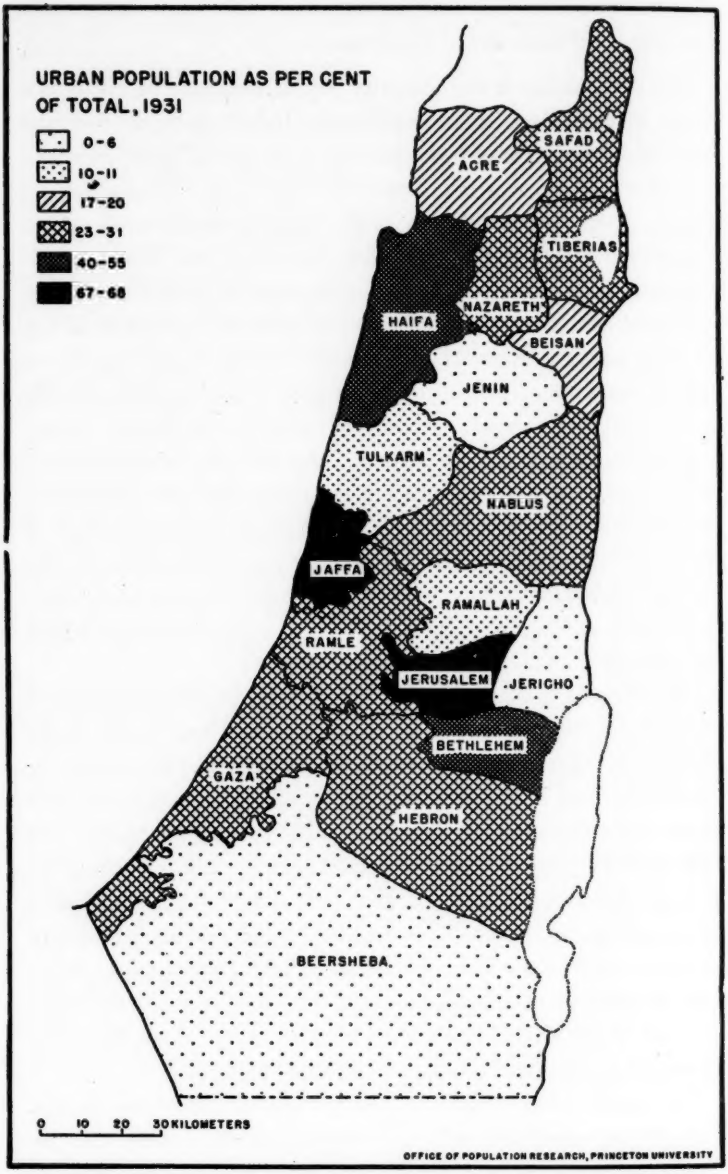

Figure 4. The urban population of Palestine as per cent of the total population, by subdivisions, 1931.

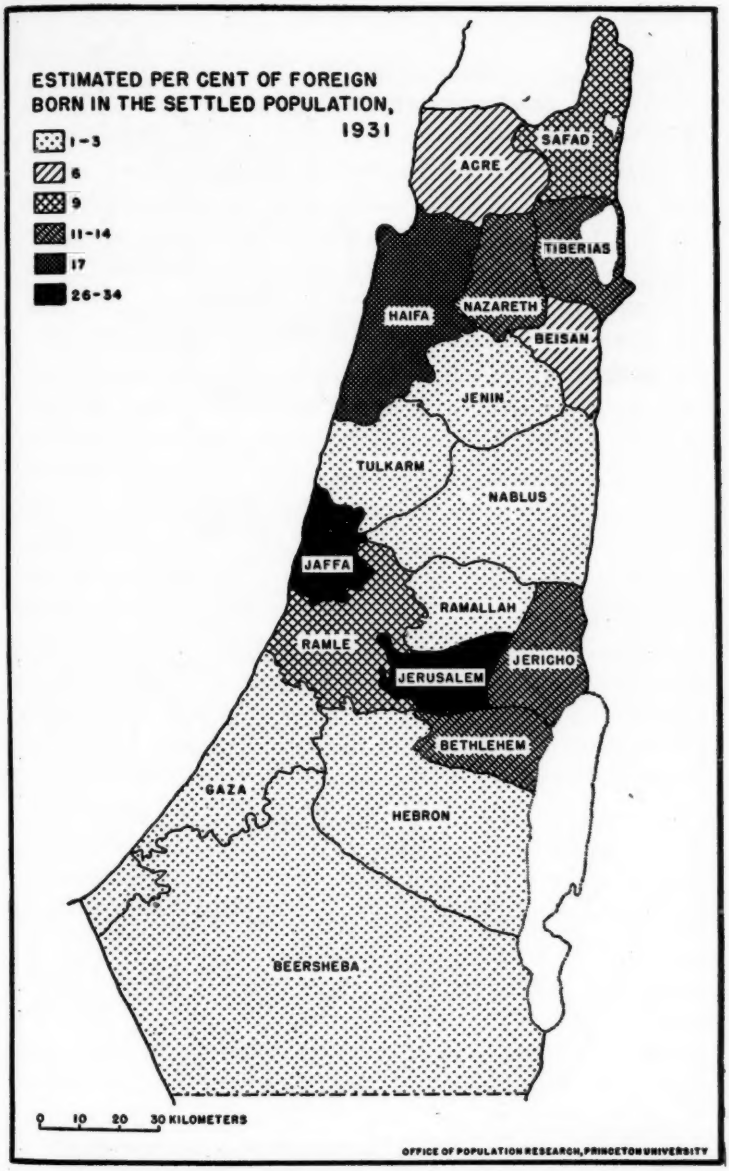

Figure 5. Estimated per cent of foreign born in the settled population of Palestine, by subdivisions, 1931.

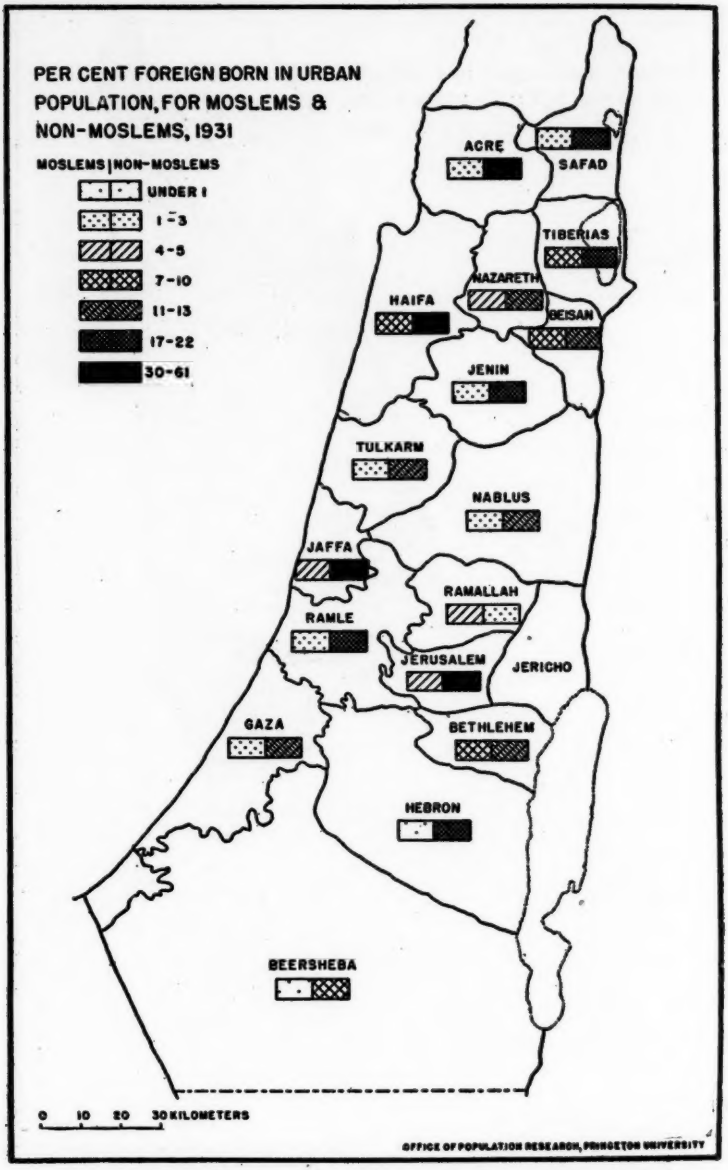

Figure 6. Estimated per cent of foreign born in the urban population of Palestine, by subdivisions and religion, 1931.

relation between the proportion of foreign born and the prevalence of persons with foreign mother tongue in each religious group, we obtain fairly reliable estimates of the proportion of foreign born in the total population of each subdivision. These estimates, as of the census of 1931, are shown in Figure 5. The belts of heavy foreign infiltration are, of course, in the Jaffa-Jerusalem and Haifa-Tiberias areas.

The proportion of foreign born in the urban Moslem and non-Moslem populations shown in Figure 6 is also instructive. In no subdivision except Ramallah did the proportion of foreign born fall below 7 per cent in the non-Moslem population, and in no case did it rise above 10 per cent in the Moslem population. More interesting than the absolute difference in the proportions of foreign born is the fact that for the Moslems they were relatively high (over 3 per cent) only in the subdivisions having substantial non-Moslem minorities. If the subdivisions are ranked from 1 to 17 (Jericho, having no "urban" population, is omitted) in ascending order of per cent foreign born among Moslems and non-Moslems, the average ranks of Moslem and non-Moslem districts are strikingly similar. The unmixed Moslem districts of Figure 3 have scores of 5.3 and 6.5 for Moslems and non-Moslems, respectively. Districts that were Moslem with significant minorities have average ranks of 8.0 and 7.5, respectively; those with large Christian minorities have scores of 11.3 and 7.8; and districts with large Jewish minorities have scores of 13.8 and 15.3. In general, the foreign born, Moslem and non-Moslem alike, tended to gravitate to the cities of those districts having the largest proportion of non-Moslem population.

The impact of the new on the old patterns is also clearly reflected in the distribution of illiteracy in 1931. Unfortunately the data are available only for the "urban" population, which was undoubtedly much more literate than the rural population. The pattern is shown in Figure 7, which gives the per cent of illiterates in the urban population age 14 or more in 1931. The areas of greatest illiteracy include

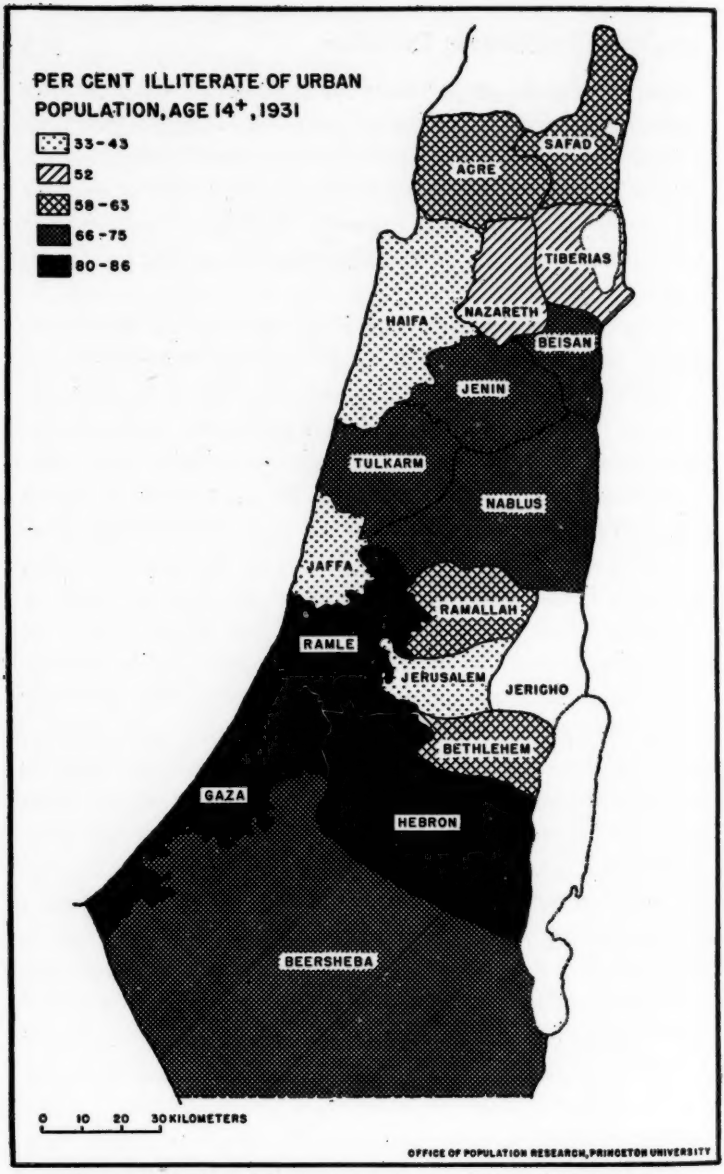

Figure 7. Proportion of illiterates in the urban population aged fourteen or more years, Palestine, by subdivisions, 1931.

the six subdivisions with unmixed Moslem population, plus Ramle and Beisan. In none of them were fewer than 66 per cent of the population illiterate. Areas with heavy Jewish minorities—Haifa, Jaffa, and Jerusalem—had the least illiteracy, with regions of Christian and other significant minorities tending to fall in an intermediate position.

In general, the pattern of urban concentration, the distribution of persons of foreign birth, and the incidence of illiteracy are all highly correlated with the distribution of the Jewish minorities, and suggest something of the role that group has played in the dissemination of new influences throughout the region.

Population Growth 1922 to 1931

Between 1922 and 1931 the settled population of Palestine apparently increased by 42 per cent.[4] This increase amounts to an annual rate of 3.9 per cent, one that if maintained would double the population in eighteen years. Within Palestine the rates of growth diverged widely, as may be seen from Figure 8. (The census data have been adjusted so that they relate to the boundaries of 1931.) The most rapid increases occurred in the middle and northern regions of modernization. Jericho and Jaffa more than doubled their populations in the nine years of the intercensal period, while Jerusalem, Haifa, and Beisan increased by between 40 and 100 per cent. On the other hand, the slowest growth occurred in the "unmixed Moslem" subdivisions of Hebron, Nablus, and Jenin, as well as in Safad, Acre, and Bethlehem, regions with large mixed or Christian minorities. However, even in these regions of slowest growth the increase was actually rapid, ranging from 15 to 24 per cent—rates that would double the population in from twenty-nine to forty-six years.

It is also clear from Figure 8 that there were substantial differences

[4] The exact rate of growth cannot be determined. Probably that cited above is somewhat too high because the census of 1922 was less complete than that of 1931. Another element of uncertainty arises from the fact that border revisions were made which affected an estimated population of about 10,000.

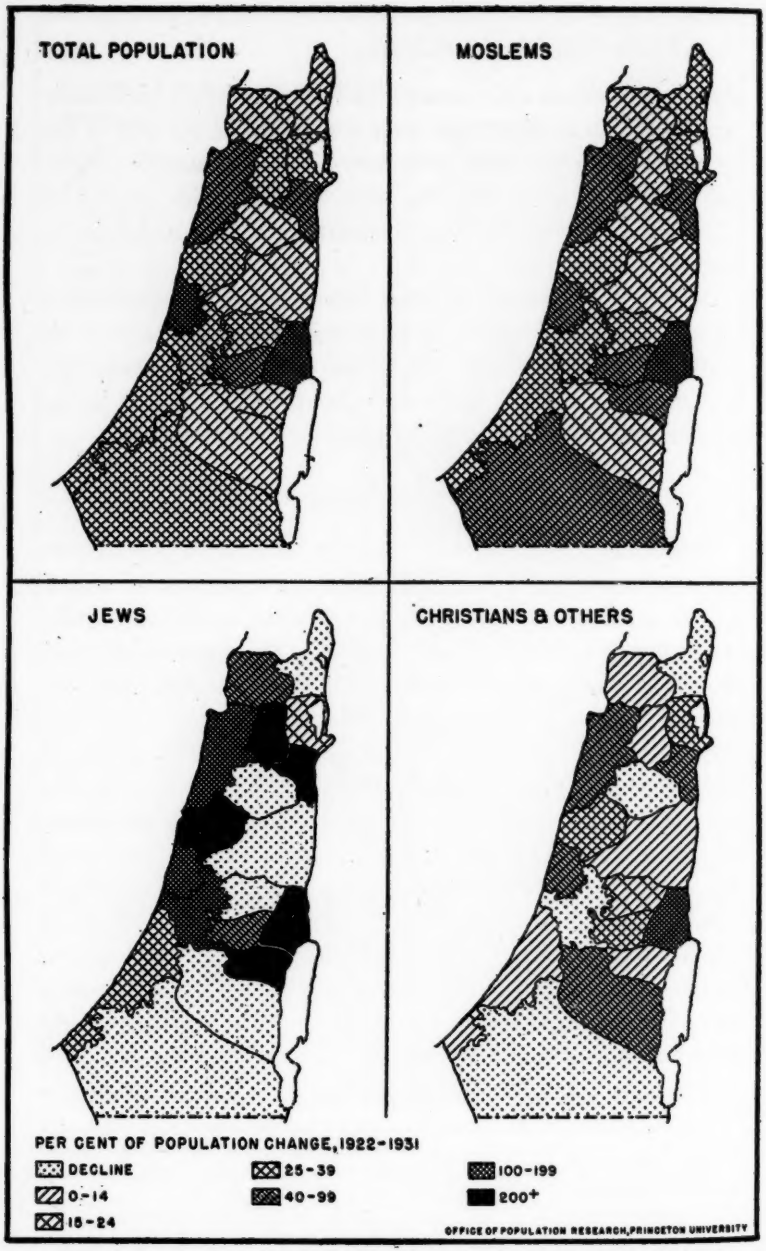

Figure 8. Per cent change of the settled population for the subdivisions of Palestine, by religion, 1922-1931. (Adjusted to boundaries of 1931.)

in the rates of increase of the religious groups between 1922 and 1931. In Palestine as a whole the Jewish population increased by 104 per cent, the settled Moslem population by 29.5 per cent, and the "Christians and Others" by 21 per cent. Contributions to growth between 1922 and 1931 were by no means proportional to the share of the population in 1922. Moslems formed 75 per cent of the population but contributed 63 per cent of the increase; Jews and "Christians and Others" each constituted 12 per cent of the 1922 population, but the former contributed 31 per cent of the growth, and the latter only 6 per cent.

In spite of the differences in the rates of growth of the religious groups, there are elements of similarity in the regional concentrations. For example, there were five subdivisions where rates of increase exceeded 40 per cent. In each of these, with one exception, each religious group increased by more than 40 per cent. The exception is "Christians and Others" in Jerusalem, among whom the increase was only 27 per cent. Conversely, there were six subdivisions in which the increase of the total population was under 25 per cent. With few exceptions each religious group increased less than 25 per cent. The exceptions are Jews in Acre, Jews and Moslems in Bethlehem, and "Christians and Others" in Hebron, the last being a numerically inconsequential group. Broadly speaking, in subdivisions that grew rapidly, each religious group grew rapidly, and in those that grew slowly, each religious group grew slowly.

Figure 8 tends to conceal the relative patterns of population change of the religious groups by subdivision. It shows, for example, that Christians increased least rapidly of the three groups in Jerusalem, but fails to bring out the fact that in terms of the average rate of growth of Christians in all Palestine, this increase was rather rapid. These relations are better shown in Figure 9, where the rate of growth of each religious group in each subdivision is expressed in terms of the per cent by which it exceeded or fell below the rate of growth of the same religious group in all Palestine. In terms of

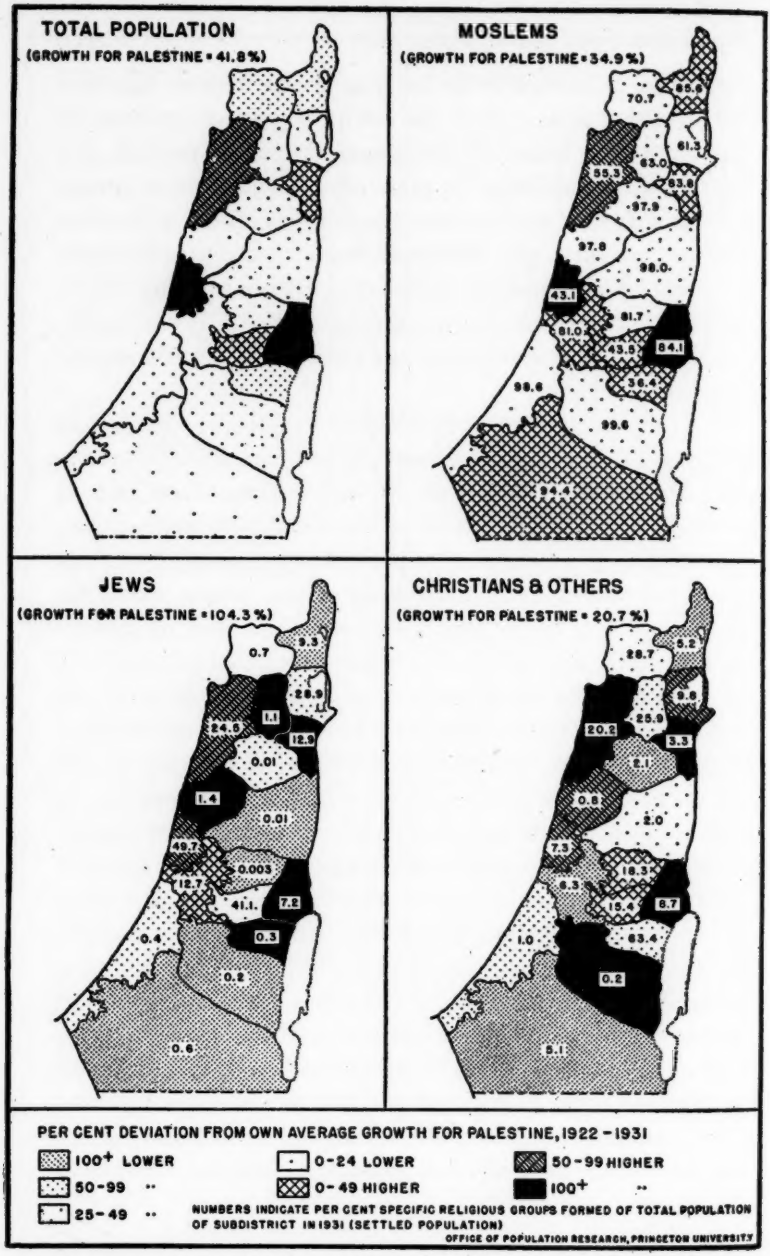

Figure 9. Rate of growth of the settled population and of each religious group by subdivisions and as deviations from the average rate of growth of the corresponding group in all Palestine, 1922-1931. (Adjusted to boundaries of 1931.)

this growth in all Palestine, the Jews in Jerusalem increased rather slowly, while the increases of the Christians and Moslems were quite rapid.[8]

Subdivisions in which total populations increased more rapidly than the population of all Palestine include Haifa and Beisan in the north, and Jaffa, Jerusalem, and Jericho in the middle band. Except for the Jews in Jerusalem, each religious group in these subdivisions grew more rapidly than its own group in all Palestine. It is apparent that all religious groups were being attracted to these bands of development. Beersheba, Ramle, and Tulkarm increased only a little less rapidly than Palestine as a whole. In Beersheba, Moslems increased at higher than the average rate but Jews and Christians were leaving. In Ramle both Moslems and Jews increased more rapidly than the average, but Christians were apparently departing. Tulkarm, on the other hand, had a smaller than average increase of Moslems and rapid increases of Jews and Christians, who, nevertheless, were numerically inconsequential.

Population growth was substantially less rapid than the average for Palestine in Gaza, Hebron, Ramallah, Nablus, Jenin, Nazareth, and Tiberias. With four exceptions each religious group in each of these subdivisions increased at less than its own average rate. The exceptions were Jews in Nazareth, who increased rapidly but even so in 1931 constituted only one per cent of the population; and "Christians and Others" in Hebron, Tiberias, and Ramallah. In Hebron the Christians remained numerically unimportant. In Tiberias the figures suggest that an earlier attempt at development had lost its attraction to Moslems and Jews while retaining it to

[8] Since *rates* of growth or decline may be very large and still wholly unimportant because the populations involved are small, Figure 9 also shows the per cent that each group formed of the total population in 1931. For example, in Hebron the rate of growth of "Christians and Others" was more than 100 per cent higher than that of this group in all Palestine. Numerically the change was inconsequential, for, in spite of such growth, "Christians and Others" constituted only 0.2 per cent of the population in 1931. On the other hand, in Bethlehem the rate of change was 50 to 99 per cent lower than in all Palestine and the change was important because the group constituted 63.4 per cent of the total population. Obviously there was a substantial emigration.

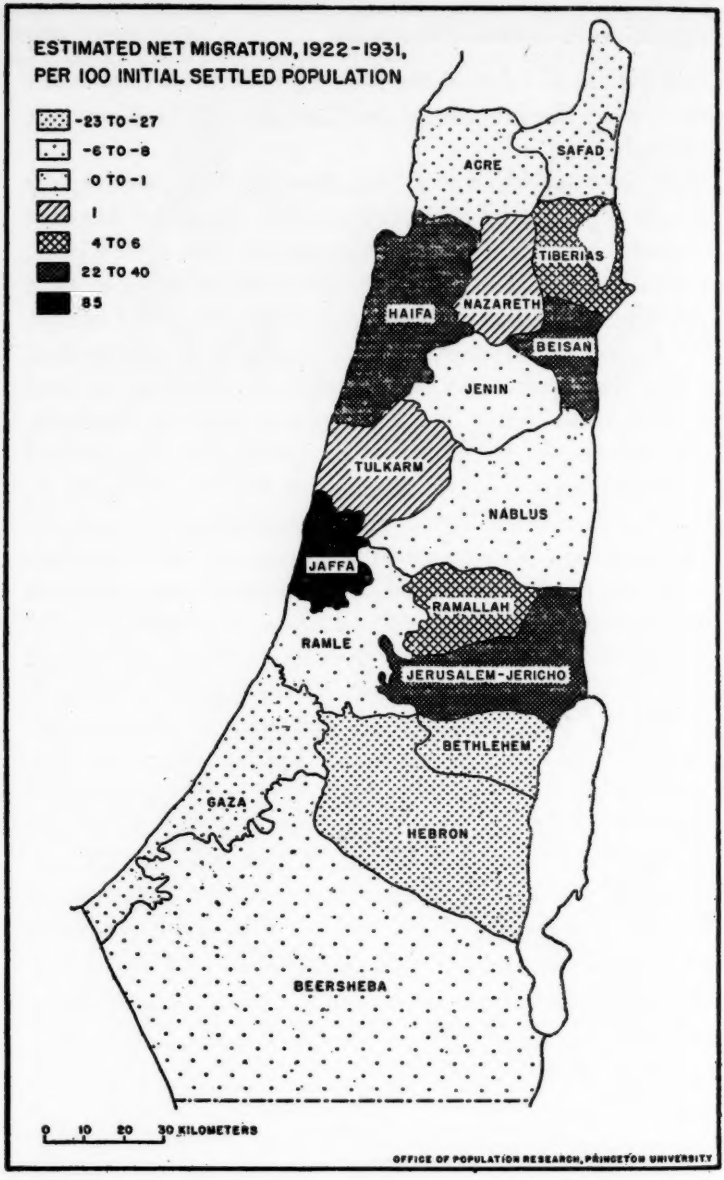

Figure 10. Estimated net migration, 1922-1931, per 100 initial settled population. (Adjusted to boundaries of 1931.)

some extent for "Christians and Others." Ramallah attracted Christians, but the very few Jews there apparently left.

The least rapid growth occurred in the subdivisions of Bethlehem, Acre, and Safad, evidently as a result of mixed situations. In Acre all groups grew at lower rates than the average, perhaps because of the attractions of Haifa and, possibly in the case of Moslems, of Safad. In Safad there was an interchange. Moslems exceeded their own average rate of growth, but there appears to have been a definite exodus of Jews and Christians, who had formed substantial minorities. In Bethlehem, as noted before, there was an exodus of Christians, part of which apparently represented migration to the United States. Their place was to some extent taken by Moslems and Jews, the latter increasing most rapidly but remaining insignificant in number.

The above discussion has suggested that various inferences concerning the currents of migration may be made on the basis of deviations of subdivisional growth from the average for the region. Obviously, the basis of such inferences is slender, since growth represents the resultant of birth and death as well as movement during the period. Given adequate information, net movement between the censuses could be obtained by adding the excess of births over deaths to the 1922 population and subtracting the sum from the 1931 population. In actual fact the operation encounters serious obstacles. There are differences in the accuracy of the two censuses, in the completeness of birth and death registration both over time and between subdivisions, in boundary changes, and between the boundaries of vital statistics registration areas and those of administrative subdivisions. All of these factors introduce errors that focus on the residual estimate of net migration. An attempt has been made to take these errors into account by a somewhat intricate system of adjustments. The results are given in Figure 10 in terms of the estimated net migration per 100 settled population in 1922. It is believed that the pattern obtained is in general correct,

but it must not be closely interpreted. Areas that appear to have had small outward movements may in fact have had small net inward movements.

Clearly there was a net migration away from Bethlehem, Hebron, and Gaza in the south, and Acre and Safad in the north. At the opposite extreme there was a net movement to Haifa, Beisan, Jaffa, the Jerusalem-Jericho region, Ramallah, and Tiberias. In the remaining subdivisions the net balance was too small to make certain of its direction in view of the inadequacy of the basic data. Apparently Beersheba, Ramle, Nablus, and Jenin lost slightly, whereas Nazareth and Tulkarm gained somewhat. These patterns in general conform with those that would be inferred from Figure 9, when it is recalled that, in view of the very heavy immigration to a few subdivisions, other subdivisions may have received migrants and still have grown less rapidly than Palestine as a whole.

In general terms, the religious pattern of population change between 1922 and 1931 suggests: (1) a trend of all groups to areas of rapid modernization, (2) the emigration of minorities from regions that were almost solidly Moslem, (3) a subsiding of enthusiasm for Tiberias, and (4) small centers of rapid development in Tulkarm, Nazareth, and Jericho. In other words, minorities were moving out where they were of negligible size but economic development was attracting all groups to the regions of primary Jewish influence.

Population Growth, 1931-1940

The population grew even more rapidly during the nine years from November 1931, to the end of December 1940, than it did in the previous nine years. In the earlier period its increase was 42 per cent. Between 1931 and 1940 it was almost 52 per cent,* a rate that

*No information is at hand by which the comparative accuracy of these figures may be judged. Since the census of 1922 was less complete than that of 1931, the recorded increase of that period was too large. The increase from 1931 to 1940 is taken from the official estimates of the settled population. Since these estimates are made by adding annual natural increase and net immigration, it is likely that they somewhat understate the actual growth.

would yield a doubling in about fifteen years. Actually the population more than doubled in the eighteen years between the census of 1922 and the last of 1940. In the former year it was 671 thousand, by the latter it had increased to 1.478 million. This is a rate of growth far exceeding any observed in the United States since the beginning of the eighteeneth century.

The higher rate of increase of the population in 1931-1940 than in 1922-1931 came predominantly from the Jews. The per cent growth rose from 104 in the first nine-year period to 165 in the second. According to the official estimates the rate of growth of Moslems declined from 29 to 27 per cent. However, part of the decline is apparent rather than real as a result of the underenumeration of 1922. "Christians and Others" increased more rapidly than in the previous period, and somewhat more rapidly than the Moslems. Of the half-million increase between 1931 and 1940, 57 per cent were Jewish, 37 per cent Moslem, and 6 per cent "Christians and Others." Differences in rates of growth had markedly altered the religious composition of the population between 1922 and 1940. During that eighteen-year period the settled population had changed from one that was three-quarters Moslem, an eighth Jewish, and an eighth Christian to one that was three-fifths Moslem, nearly one-third Jewish, and one-eleventh "Christians and Others."

It is not possible to trace the regional pattern of growth between the census of 1931 and the end of 1940 very satisfactorily. Data existing are those published as current estimates and refer to current boundaries. Since there were substantial changes in the boundaries of subdivisions after the census, and no explicit description of them has been found, there are possibilities of substantial error. On the basis of such information as is available (for the most part internal evidence checked from inadequate maps) official estimates have been revised to apply to the boundaries of 1931. It is believed that the results are reasonably accurate. They are presented in Figure 11, which shows, for each subdivision, the per cent of growth of the

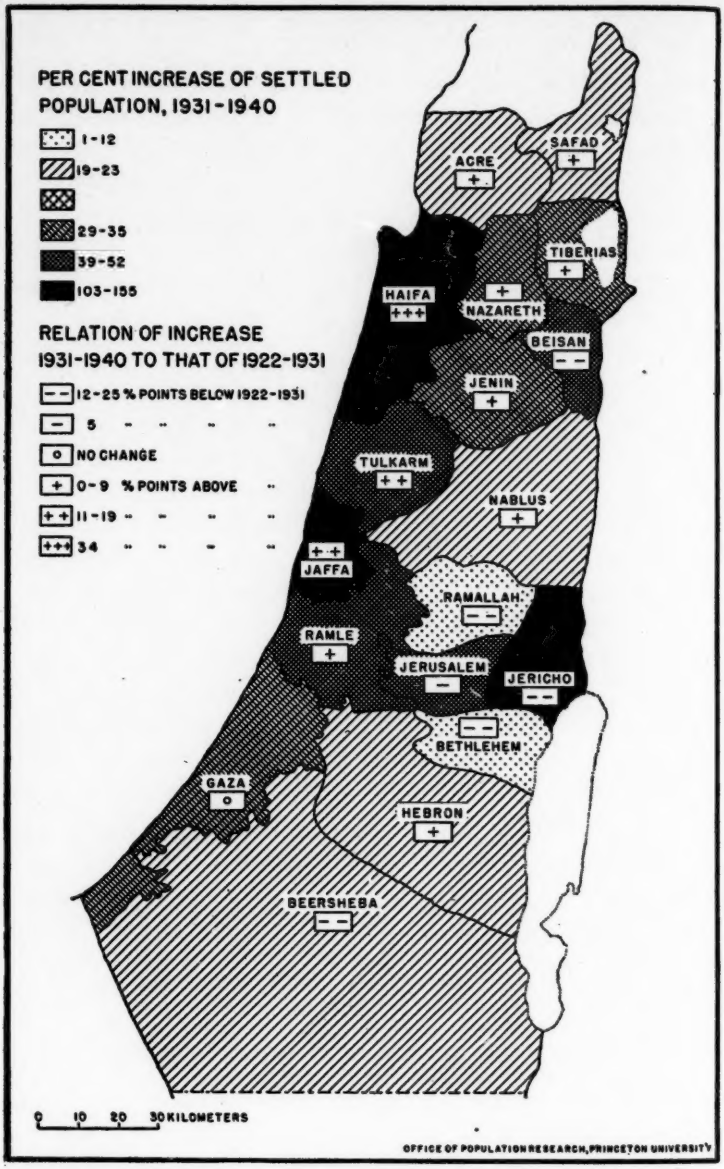

Figure 11. Estimated per cent increase of the settled population of Palestine, by subdivisions, 1931-1940, and the relation of the increases to those of 1922-1931. (Adjusted to boundaries of 1931 on the basis of unsatisfactory information.)

total settled population. To facilitate comparison with the earlier nine-year period, symbols are also entered indicating the per cent points by which that rate exceeds or falls short of the growth in the corresponding area during the preceding nine-year period.

As in the earlier period, Jaffa and Jericho[7] doubled their populations between the last of 1931 and of 1940, and Haifa joined the list of those doubling their numbers. The rate of growth in the latter nine years was substantially higher than in the former in Haifa and Jaffa, but may have been somewhat smaller in Jericho. Additional subdivisions with rates of increase exceeding 39 per cent in the latter period probably included Tulkarm, Beisan,[7] Jerusalem, and Ramle. At the other extreme, seven subdivisions grew by less than 25 per cent. Beersheba and Ramallah were newcomers to the list, having grown substantially faster in the previous period. Bethlehem dropped from the second to the lowest class. The others, which were in the same growth class as before, were Hebron, Nablus, Acre,[7] and Safad. In general terms, the growth patterns from 1931 to 1940 suggest an intensification of the movement toward the areas of Jewish development and its periphery, with growth occurring most rapidly on the coast and in the northern and middle bands of modernization.

As the regional growth suggests, following 1931 the increase went heavily to the incorporated places. (Figure 12.) Although incorporated places had only 40 per cent of the settled population

[7] Statements relate to the estimated increase of population within the 1931 boundaries of the subdivisions. Paucity of information concerning the territorial changes makes some error unavoidable. However, with the exceptions noted below, the above statements hold true even if no allowance is made for territorial changes.

Jericho. Without allowance for boundary changes, growth was about 29 per cent instead of 155 per cent. Apparently Jericho lost territory to Ramallah, Jerusalem, and Bethlehem.

Beisan. Without allowance for boundary changes growth was 29 per cent instead of 42 per cent. Apparently Beisan lost territory to Jenin.

Bethlehem. In any case growth was less than 25 per cent. Without allowance for boundary changes, it was 21 per cent instead of 1 per cent. Bethlehem apparently gained territory from Jericho and Hebron.

Acre. Without allowance for boundary changes, growth was 28 per cent instead of 21 per cent. Acre apparently gained territory from Safad and Nazareth, and possibly a little from Haifa.

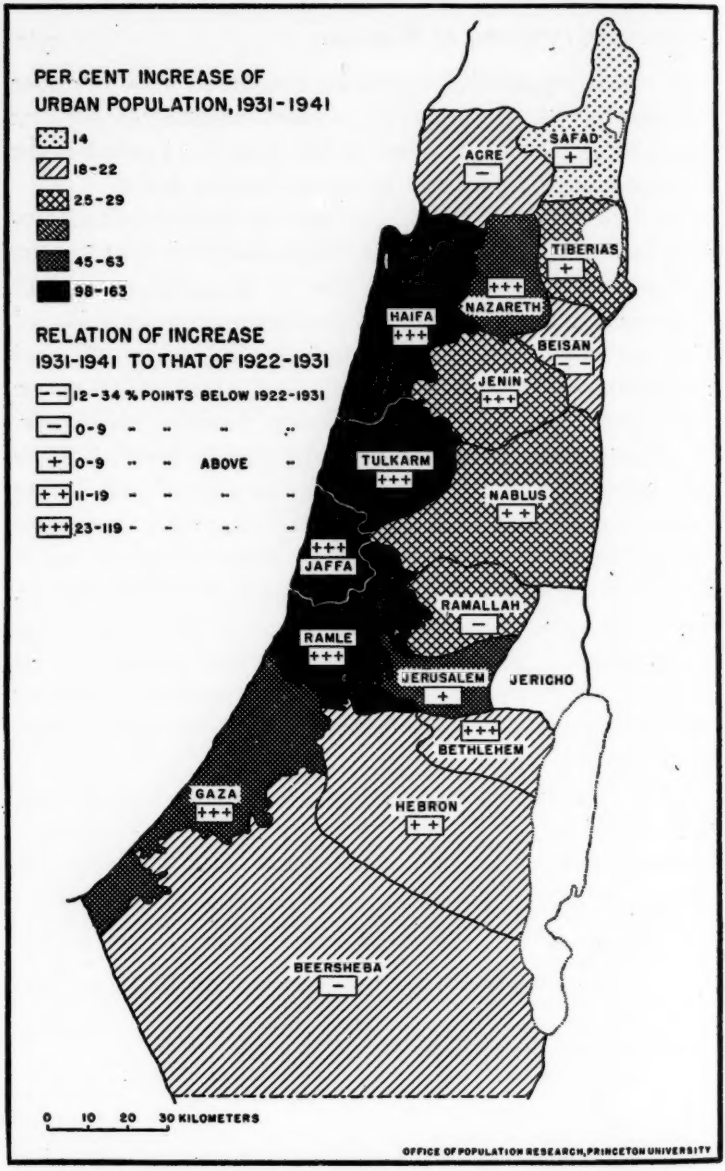

Figure 12. Estimated per cent increase of the urban population of Palestine, by subdivisions, 1931-1941, and the relation of the increases to those of 1922-1931.

at the census of 1931, they attracted 62 per cent of the increase between the census and July 1, 1941. On the other hand, settled population outside incorporated places had 60 per cent of the population, but only 38 per cent of the increase. This "rural" (actually village) population grew more slowly than during the intercensal period 1922-1931. Then it increased by 39 per cent. Between the census of 1931 and July 1941, it increased only 34 per cent (32 per cent if the figure is adjusted to the number of years between the censuses). On the other hand, the "urban population" grew by 47 per cent between the censuses, but by 85 per cent between the 1931 census and July 1941 (81 per cent, if adjusted to the length of the intercensal period). In 1922, only 39 per cent of the settled population was urban, by mid-1941 the figure was 48 per cent, or if nomads are included the per cent urban was probably about 46 in 1941.

Between the census of 1922 and the end of 1940, the total population of Palestine (including nomads) more than doubled, rising from 757 thousand to 1.545 million, with the increase going primarily to the coastal areas and the northern and middle bands of development. The increase was predominantly urban. Rural population increased only about 72 per cent, whereas the urban population grew by 165 per cent. The Jewish population increase was somewhat larger than the Moslem in spite of the fact that at the beginning of the period Jews formed only about one-eighth of the population while Moslems constituted about three-quarters. By the end of 1940, Jews constituted about three-tenths of the total and Moslems about six-tenths.

The Components of Growth

The population growth thus far traced arises, of course, from both immigration and natural increase, the latter being the difference between births and deaths. Examination of these components will assist in the appraisal of future prospects for growth. Owing to gaps in the basic data, however, the analysis must be limited to the

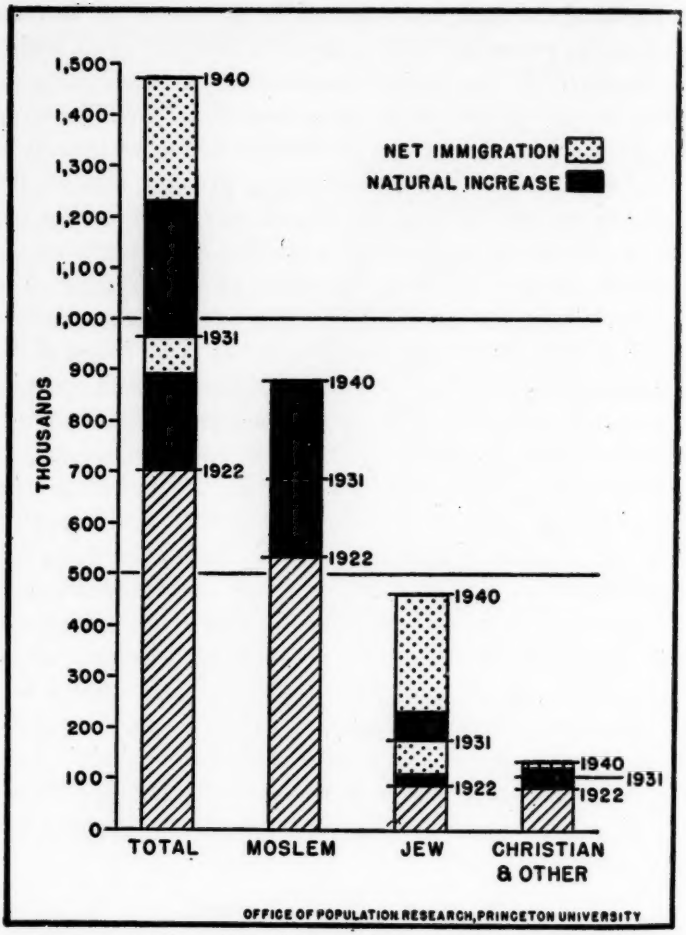

Figure 13. Settled population of Palestine for 1922, 1931, and 1940, by religion, and the intervening growth distributed between natural increase and net migration on the basis of estimates.

population classified by religion, and to subdivisions grouped in accordance with the classification of Figure 3.

Figure 13 shows the total population for Palestine and the three

religious groups in 1922, 1931, and 1940, as well as the intervening increases distinguished as coming from natural increase or net immigration. The increases were larger in the latter than in the former period both from net migration and from natural increase. Among the Moslems and "Christians and Others," growth came predominantly from natural increase; but among the Jews, primarily from immigration. In total, the Moslem increase from 1922 to 1940 was about 10 per cent less than that of the Jews.

The similar order of magnitude of the Jewish and Moslem total increase arises of course from the smaller Moslem rate of increase operating in the bigger Moslem population. The increases are expressed in terms of the population base in Figure 14, which also takes account of the slight difference in the length of the two time intervals.* It is apparent from Figure 14 that the more rapid rate of increase of the second than of the first period came exclusively from increases in the net immigration of Jews and "Christians and Others." Moslem immigration, never large, virtually disappeared in the second period. On the other hand, a slight net emigration of Christians in the first period was replaced by a rather substantial net immigration in the second. The rates of natural increase in each religious group remained much the same in the second as in the first period, the slight drop in the rate for the total population being chiefly accounted for by the increasing proportion of Jews in the population, so that their lower rate of natural increase obtains more weight in the second period. Throughout, rates of natural increase

* Figure 14 gives the average yearly increases expressed in terms of the average population of the period. It should not be interpreted closely because of defects both of basic data and of the measure used. Birth and death registration was defective before 1926, and the censuses of 1922 and 1931 differed in accuracy. The figure for 1940 is based on estimates carried forward from the 1931 count. The measurement device, which has for its denominator the average of the two terminal populations, is not very satisfactory. The population bases were changing rapidly through migration that was not distributed evenly over the period. Because of these difficulties, one would not conclude, for example, that the average rate of natural increase for Moslems was lower in the second period than in the first. It probably was somewhat higher. The only justified conclusion from this chart is that it was much the same order of magnitude in both periods, and was higher than the natural increases of the other two groups.

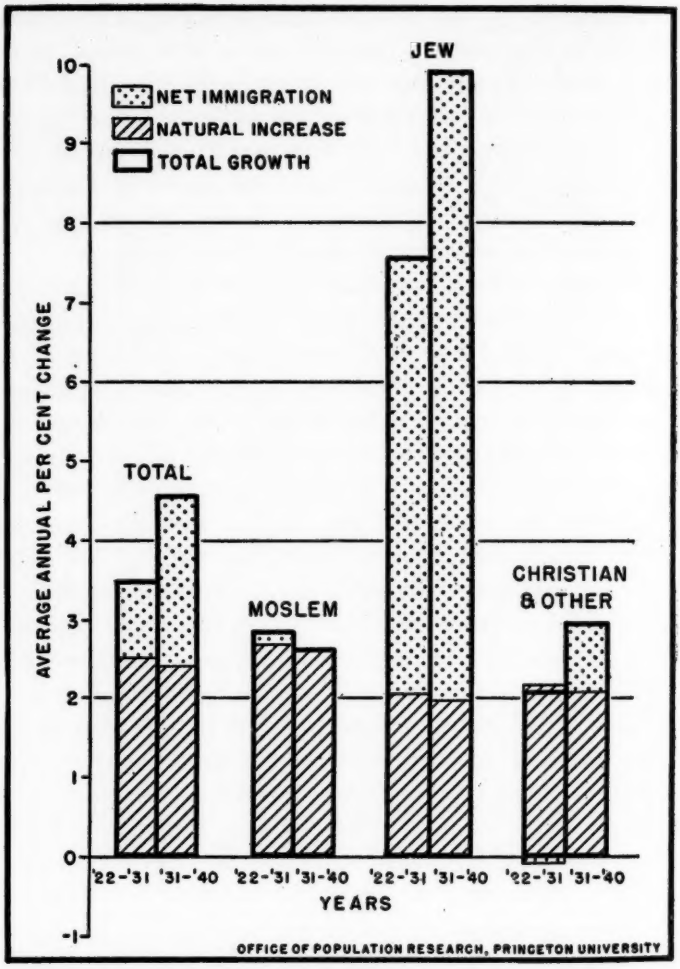

Figure 14. Estimated average annual per cent change, natural increase, and net migration for the total settled population of Palestine and its religious groups, 1922-1931 and 1931-1940. (Changes are expressed in terms of the average of the 1922 and 1931 population.)

were highest for Moslems and lowest for Jews. The rates for "Chris-

tians and Others" were a trifle higher than those for Jews.[9] However, the differences were small in magnitude compared to those in immigration.

Although in the period under consideration immigration was the dominant factor in growth, in the long run differences in rates of natural increase may become of very great importance in determining both the rate of increase of the total population and its distribution between religious groups. It is necessary therefore to examine the components of natural increase. First we may consider mortality.

The crude death rates of the year 1931 for subdivisions classified by the religious composition of the populations are shown by the black bars of the left-hand panel of Figure 15.[10] It is immediately apparent that the unmixed Moslem areas had much the highest death rates, and were followed by Moslem areas with significant minorities, subdivisions with substantial Christian minorities, and finally, with the lowest death rates of all, by the areas with substantial Jewish minorities.

These crude death rates give an unsatisfactory comparison of the risks of death in the different regions because they are influenced by the age composition of the populations as well as by the hazards to life in each age. The effect of the differences in age can be eliminated by a process of standardization. The standardized death rates shown by the shaded bars of the left-hand panel refer the risks of death observed in each age group to the age distribution of Palestine as a whole. It is apparent that the unmixed Moslem districts and the Moslem districts with significant minorities both had relatively unfavorable age distributions, so that their crude death rates were

[9] It should be recalled that "Other" religions were grouped with Christians to retain a homogeneous Moslem group, not because of their demographic similarity to the Christians. In fact the birth rates of the "Other" group are undoubtedly much closer to those of the Moslems than to those of the Christians. It is possible that they are even higher than Moslem rates.

[10] These death rates are estimated from data relating to health districts which are not precisely coterminous with the subdivisions. Except for the fact that Jericho and Jerusalem are combined, they represent an attempt to obtain the same classification used in Figure 3. The resulting rates are probably substantially accurate.

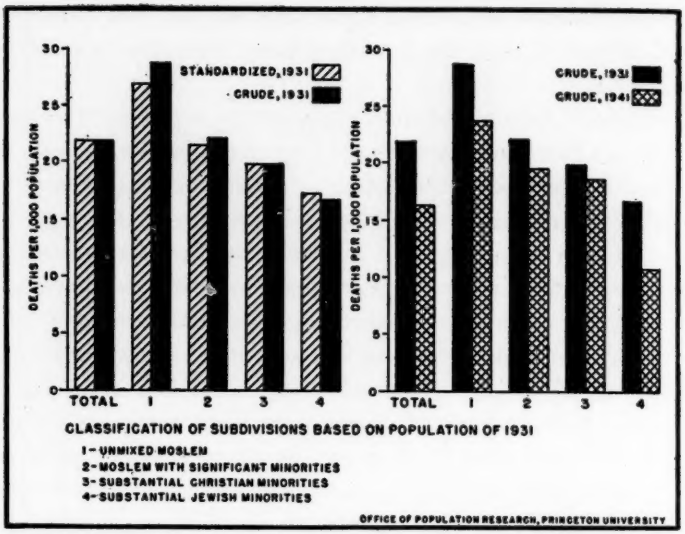

Figure 15. Estimated crude and standardized death rates for 1931 and crude death rates for 1931 and 1941, for the settled population of Palestine and its subdivisions grouped by the religious affiliation of their populations in 1931.

somewhat too high. The districts with Jewish minorities, on the other hand, because of their heavy immigration, had a somewhat more favorable age distribution, so that their crude rates were relatively too low. The actual differences in mortality were therefore somewhat less than the crude death rates indicate.

It is not possible, for lack of age distributions, to compute standardized death rates for years subsequent to the census. However, for the year 1941 crude death rates have been estimated for areas comparable to those used for 1931. These rates for 1931 and 1941 are shown in the right-hand panel of Figure 15. It is evident that there were sharp declines in the death rates of all regions. Changing age compositions may have been in part responsible, but it is quite unlikely that they were the principal factor. In the ten years considered, mortality declined spectacularly in all regions.

Figure 16 presents the same materials explicitly for the religious

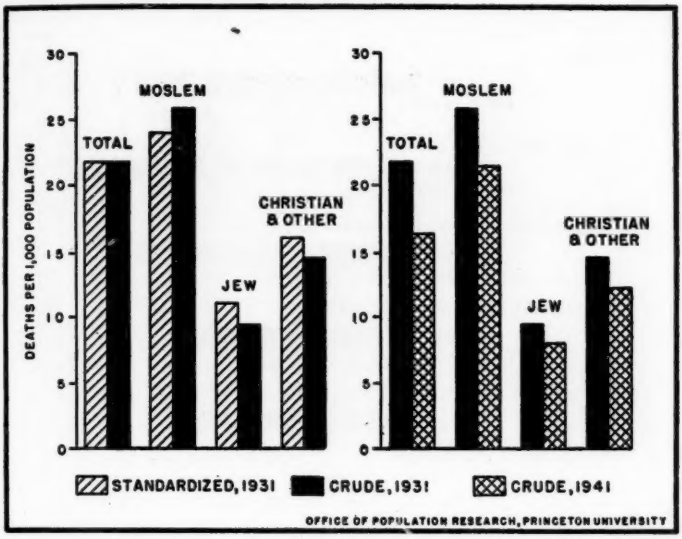

Figure 16. Estimated crude and standardized death rates for 1931 and crude death rates for 1931 and 1941, for the settled population of Palestine, by religion.

groups, bringing out both the fact that the differences in the crude rates were somewhat greater than the risks to life would justify, and the fact that death rates declined sharply in each religious group. It is to be noted also that the decline in the Jewish death rate was less than the decline in the death rate for the total population in subdivisions with substantial Jewish minorities shown in Figure 15. The difference suggests that in the areas with substantial Jewish minorities, mortality was declining more rapidly among non-Jews than among Jews.

Infant mortality is at once the most sensitive index of health conditions, and, in an area such as Palestine, an important part of total mortality. Figure 17 shows the estimated infant mortality rates for the classification of subdivisions based on religion. There is considerable year-to-year variation in the rates. In order to make a conservative comparison, the figure shows the rates for 1931, a

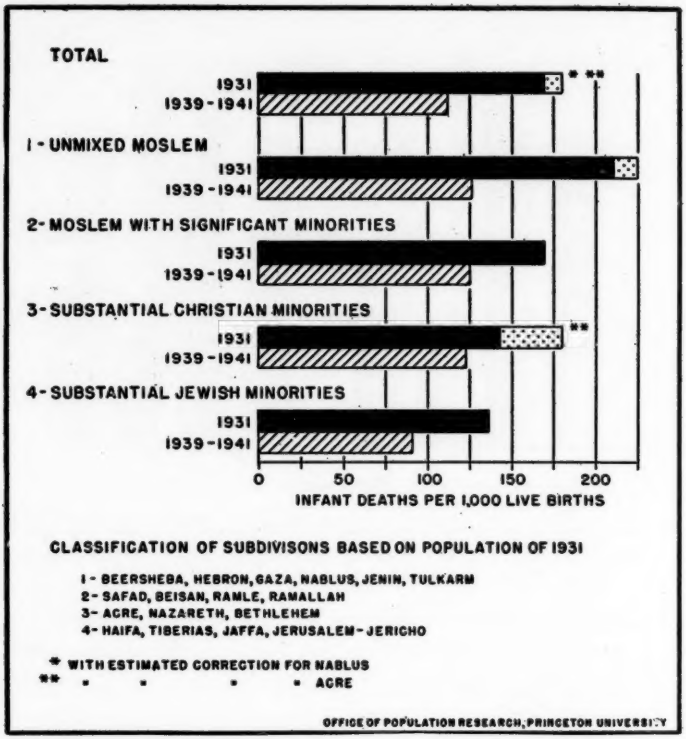

Figure 17. Estimated infant death rates for the settled population of Palestine and its subdivisions grouped by the religious affiliation of their populations in 1931, for 1931 and 1939-1941.

relatively good year, and the average rate for 1939-1941, which combines a good, a medium, and a rather poor year. Again the figures are estimates from data for health districts and considerable uncertainty attaches to the comparison, the more so because there was plainly under-registration in Nablus and Acre. In any case, it is plain that there were very large declines. In 1931 there were wide differences between regions. By 1939-1941, except for the subdivisions with substantial Jewish minorities, the differences had virtually disappeared. Infant death rates were still high by Western

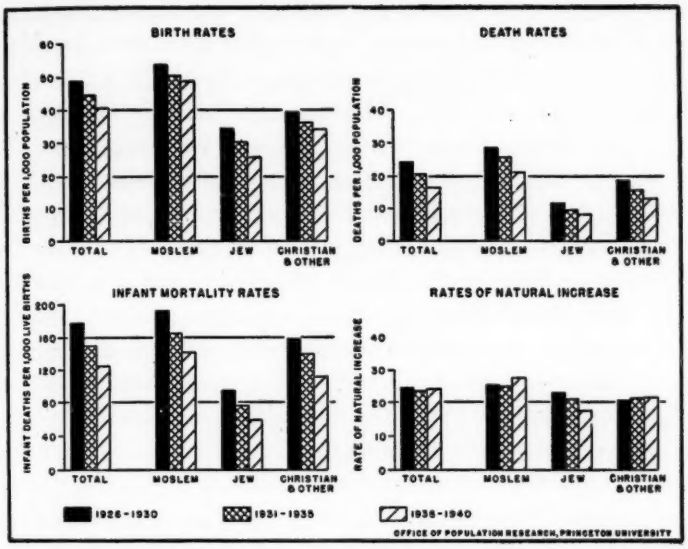

Figure 18. Official birth, death, infant mortality, and natural increase rates for the settled population of Palestine, by religion, 1926-1930, 1931-1935, and 1936-1940.

standards; the current rate for the United States, for example, is about 40. Nevertheless, remarkable progress had been made in reducing infant deaths. By 1939-1941 the districts with substantial Jewish minorities had rates well under 100, and the rates of the other sections were close to 125. However, the rate for Palestine as a whole had dropped from about 175 to 112—a somewhat notable achievement. It is clear that the impact of modernization on mortality has been very large during recent years, and has affected all parts of the country.

It has not been feasible to estimate birth rates by groups of subdivisions, as was done in the case of mortality. However, the differences in crude birth rates by religious groups are given in the upper left-hand panel of Figure 18 for the three five-year periods for which reasonably reliable information exists. Differences of the same type, but of smaller proportional magnitude, as those found

in mortality appear. Rates for Moslems were higher than those for Christians, which in turn were higher than those for Jews. Again, crude rates can be misleading as to the actual level of fertility. Crude rates depend both on age-specific fertility and on the proportion of the population in the childbearing period. To avoid this difficulty we resort to a gross reproduction rate. This rate tells us how many girl babies would be born alive to a woman living through the childbearing period, i.e., the ratio of successive female generations in the absence of mortality and at current fertility rates. Rita Hinden has made the calculations on the basis of the experience of 1931 for Moslems and Jews.[11] She obtained 3.33 for Moslems and 1.61 for Jews. In other words, if there were no deaths from birth to the end of the childbearing period, no immigration, and the birth performance of the year 1931 continued in force, the Moslem population would more than triple every generation of about thirty years. The Jewish population would increase by 1.6 times. The Moslem fertility is one of the highest recorded in the world. That of the Jews is much the same as that of Italy at the same date. It is to be noted that the crude birth rate of Moslems was only two-thirds higher than that of Jews, but the true level of Moslem fertility was about double that of the Jews. The smaller difference of the crude rate is due to the fact that the Jewish rate was supported by a population recruited by migration that was heavily concentrated in childbearing ages. This advantage would disappear in some years after migration stopped. The same factor has contributed to the higher birth rates of the foreign-born population of the United States.

Unfortunately the data with which to obtain gross reproduction rates for the periods before and after 1931 are not available. We cannot, therefore, get direct evidence concerning the true trend in fertility, and must depend on the crude birth rates. However, that

[11] Hinden, Rita: "The Fertility and Mortality of the Population of Palestine." *The Sociological Review*, London, XXXII, Nos. 1 and 2, January-April, 1940, pp. 29-49. In the absence of a classification of births, by age of mother, substitute fertility schedules were used.

evidence is striking. The birth rates declined in each religious group, as the upper left-hand panel of Figure 18 shows. It is not surprising that Jewish rates declined. Birth rates were falling throughout the Western world, and the Jewish demographic behavior resembles that of the West from which the majority of the stock comes. On the other hand, as pointed out before, the Moslem birth rate is one characteristic of the peoples of undeveloped colonies. Such rates respond only slowly to the forces of modernization. It is much more surprising to find it declining. Part of the decline may actually have been due to changing age distributions, as the short cohorts born during the First World War were coming into the childbearing period. However, it seems unlikely that this explains the entire drop, and virtually certain that fertility actually declined. It is fair to conclude that even in the short span of modernization, the Moslem birth rate was beginning to respond downward.

The crude rates of natural increase, i.e., the differences between the crude birth and death rates, are shown in the lower right panel of Figure 18. Over the period referred to, the rate declined sharply for Jews because the birth rate dropped more than the death rate. For Moslems, the rates tended to rise, the decline in the death rate having been somewhat more rapid than that in the birth rate. For the whole of Palestine there was little change. Human reproduction had become less wasteful, in that much the same net increase was obtained from lower fertility and lower mortality.

It is also apparent that the differences in natural increase of the religious groups were much less than those in either birth or death rates. They were nevertheless marked. Moslem rates exceeded those for Jews by 11 per cent in 1926-1931, 19 per cent in 1931-1935, and 57 per cent in 1936-1941, a disparity increasingly favorable to Moslem growth.

Actually, the difference in the growth potential of the Moslems and Jews was much larger than the comparison of crude rates of natural increase would suggest. Jews, through heavy immigration,

have developed an age distribution temporarily favorable to low death rates and high birth rates, hence very favorable to high rates of natural increase. Unless the population were constantly recruited by immigration, this situation would not continue indefinitely. The underlying situation implicit in the schedules of fertility and mortality can be seen from the net reproduction rates and the intrinsic rates of natural increase. The net reproduction rate tells us the ratio of two successive female generations that would arise from the maintenance of observed age schedules of fertility and mortality; or, on another view, the ratio of the populations at intervals of a generation that would ultimately be developed from the existing age schedules of vital rates. On the basis of the experience for the year 1931, Hinden obtained net reproduction rates of 1.88 for Moslems and 1.36 for Jews.[22] These mean that the age schedules of birth and death of 1931 would yield 188 births in the daughter generation per 100 births in the maternal generation among Moslems and 136 among Jews. Or, looking at it another way, if the fertility and mortality of 1931 remained indefinitely in force and there were no immigration, the Moslem population would grow by 88 per cent per generation, while the Jewish population would grow by 36 per cent per generation. The mean length of a generation is a somewhat variable factor, 30.2 years for Moslems and 29.5 years for Jews.[23] Taking the length of generation into account, we can compute intrinsic (or "true") rates, which show the annual rates of natural increase that, in the absence of migration, would arise from the maintenance of existing age schedules of birth and death for a sufficient time to permit them to establish their own characteristic (stable) age distributions. In the present instance, the age schedules of vital rates for 1931 would ultimately give annual rates of natural increase of 20.8 per 1,000 for Moslems, and 10.3 for Jews.

[22] Hinden, *super cit.*

[23] In the discussion that follows we are following Hinden's procedures and using her basic data. The computations have been re-run by somewhat more rigorous procedures, and slightly different values result.

These rates may be contrasted with the crude rates of 27.4 for Moslems and 22.6 for Jews. The intrinsic rate for "Christians and Others" was probably in the neighborhood of 18, with which the crude rate of 23.9 may be compared.[14] The lower intrinsic than crude rates reflect the fact that past events have left existing age distributions which are more favorable to growth than those that the vital schedules of 1931 would themselves ultimately set up. Actually the annual increase implicit in the vital schedule of 1931 was about 2 per cent for Moslems and about one per cent for Jews. Clearly, differences of this magnitude have an important bearing on the prospects for future growth.

Prospects for Future Growth

We may approach the problem of prospective growth on the assumption that there will be no migration into or out of Palestine. The assumption is of course false, but it is also pertinent for the reason that the internal capacity for growth should be an important consideration in determining future policy with respect to migration. We may further assume a reasonable state of public order and of economic activity, because the problem of formulating continuing policy with respect to migration will not arise unless the region is in a position to attract migrants.

Given more accurate and complete data than are available for Palestine, considerable progress could be made in showing precisely how the population would grow under alternative and fairly reasonable assumptions. In the absence of such data, we shall have to approach the problem with highly arbitrary and unrealistic assumptions, and then consider their modification.

As Table 1 indicates, if we start with the population of 1940 and assume that growth between 1940 and 1970 is determined by the

[14] The intrinsic rate for "Christians and Others" has not been computed. The above figure is merely an estimate based on the assumption that, for that group, there would be the same ratio between the crude and the intrinsic rates as was found for Moslems. Undoubtedly the figure is inaccurate, but it is close enough for present purposes.

Population and Density	End of 1940 Official Estimate	Hypothetical Population. End of 1970 Assuming No Migration and Continuance of 1931 Rates of Natural Increase	
		Intrinsic	Crude
	Numbers in thousands		
Population by Religion			
Total	1,478	2,508	3,191
Moslems	881	1,647	2,005
Jews	464	632	913
Christians and Others	133	229	273
	Per cent		
Population by Religion			
Total	100.0	100.0	100.0
Moslems	59.6	65.7	62.8
Jews	31.4	25.2	28.6
Christians and Others	9.0	9.1	8.6
	Density in square kilometers		
Density			
Total Palestine	56.2	95.4	
Palestine Excluding Beersheba	107.7	182.7	

Table 1. Estimated population for 1940 and hypothetical population for 1970. Palestine, by religious groups. (Settled population.)

crude rate of natural increase of 1931, we would reach a population of about 3.2 million by 1970, of which about 63 per cent would be Moslem and 29 per cent Jewish. Implicit in such growth would be the assumption that the age distributions would remain unchanged, and either that fertility and mortality would remain unchanged at their 1931 levels or that the changes would cancel each other. It has been shown above that in the absence of migration, the age distributions will shift to ones less favorable to growth. For this reason the hypothetical populations based on crude rates are too large. In the case of the Jews it has appeared that by 1941 the crude rates of natural increase had already dropped below the level of 1931. Since the Jewish population is demographically similar to that

of Southern Europe, we may expect the vital schedule to become less favorable to growth. The hypothetical figure of 913 thousand for 1970 is therefore clearly too large if there is in fact no immigration. Among Moslems, too, the rates of natural increase may well decline somewhat, although they will tend to be supported by the fact that the drop of the birth rate will largely be canceled by the drop of the death rate. For some years it is even possible that the rate of increase will rise. But, by 1970, it will almost certainly have dropped somewhat. The hypothetical figure based on the geometric increase at the crude rates of 1931 are clearly too large.

Another hypothesis will serve to change the biases. We may assume that between the end of 1940 and of 1970, the population will increase by the intrinsic rates of natural increase for 1931. In that case the actual rate of increase following 1940 would be 20.8 for Moslems and 10.3 for Jews, instead of the above 27.4 and 22.6 respectively. This amounts to assuming that there will be no change from the 1931 intrinsic natural increase, but that both the Moslems and the Jews forego immediately the existing stimulus to growth offered by the actual age distribution. On that assumption, and an analogous rough calculation for the "Christians and Others," the total population for Palestine by 1970 would be 2.5 million (except for nomads, who are excluded throughout). Of these about 66 per cent would be Moslems and about 25 per cent would be Jews.

In the case of the Jews it seems unlikely that future decline in natural increase will wholly cancel the enormous immediate impetus to growth given by the existing favorable age distribution. We may conclude, therefore, that without further immigration, the Jewish population by 1970 would be somewhat higher than 632 thousand and lower than the 913 thousand obtained from the crude rates, and probably would be nearer the former than the latter figure.

In the case of the Moslems we can perhaps be more definite. The existing age distribution is somewhat more favorable to growth

than the stable age distribution implied by the intrinsic rates for 1931. However, the difference is much less marked than in the case of the Jews, and there is less reason to expect a sharp decline in the intrinsic rates of increase. Given favorable political and economic conditions, birth rates will undoubtedly decline sharply, but for a considerable period of time the effect of this decline on growth may be substantially canceled by further declines in mortality. All things considered, it is probable that the figure of 1.6 million by 1970 is not unrealistic. On the basis of present evidence it would be unwise to count on fewer Moslems by 1970. These conclusions follow from the assumption of continuing economic development of the region. Prolonged political and economic chaos would of course curtail growth. Under these circumstances, the problem of accepting migrants would then be academic.

It follows from the above that plans for Palestine's future should be based on the assumption that without any additional migration the population could be expected to reach 2.5 million by 1970. This figure would mean a rise in the density of all Palestine from 56.2 persons per square kilometer in 1940 to 95.4 by 1970. Or, if Beersheba is excluded as of very limited usefulness (and the nomad population has been excluded), the density would rise from about 108 in 1940 to 183 in 1970. The figure that includes Beersheba represents a density somewhat larger than the densities about 1930 of Poland, Denmark, Hungary, and North Ireland, and only a little less than that of Switzerland and Czechoslovakia. If the desert of Beersheba is excluded, the hypothetical population for 1970 gives a density very much larger than that of Italy or Germany in 1930, and one exceeded in Europe only by the Netherlands, England and Wales, and Belgium, which had substantially higher densities.

The Meaning of Palestine's Growth Potential

The fact that Palestine, with or without further immigration, is destined to have a truly dense population does not lead easily and

automatically to sweeping conclusions concerning policy with regard to immigration. In a trading world, there are no simple relations between density of settlement and living conditions. Nor is it to be automatically assumed that specified numbers of new immigrants will by that much increase the population beyond the amount otherwise to be obtained.

Probably no insuperable obstacles would prohibit the support of the prospective population at reasonable levels of living if there is a rapid and integrated development both of the economy of the region and of opportunities for trade within the Near Eastern hinterland and with the world. There are considerable possibilities of further developing agriculture provided that the rather heavy capitalization required can be obtained, as hitherto, on the basis of political rather than economic incentives. Even so the population in prospect will have to depend heavily on non-agricultural production, again requiring heavy capitalization. The region has in some respects a favorable location between European heavy industries and African and Asiatic raw materials. There are apparently considerable possibilities of producing light consumers goods for the Near East. Full use will have to be made of these possibilities and also of those for developing highly specialized products based on the somewhat slender mineral resources of the region. In short, it seems probable that a reasonable level of living can be obtained for the growing population, but it will require capital and organizing skill, and will require them on a scale that cannot be expected to be forthcoming on the basis of economic incentives. The needed economic development may be possible; it can scarcely be profitable and certainly will not be automatic. Clearly, therefore, all parties in the region have a stake in the maintenance of Jewish interest, as a means of attracting both the needed capital and skills.

Moreover, continued immigration on a limited scale will not necessarily speed growth. How fast the present population multiplies depends essentially on how fast the Moslems accept the small

family pattern. This in turn depends on how rapidly Western ideas and ideals penetrate the region. Additional immigrants, especially if located away from present centers of Jewish concentration, could serve as new foci for the diffusion of the small family pattern. (It is not essential that Moslems like Jews in order to imitate them. It is only essential that Moslems begin to want the things that Jews have and imitate the Jewish ways of getting them.) Additional foci of Jewish influence might therefore serve to cut Moslem growth, or at least to slow it. In passing, it may also be noted that the rigid segregation of Jews and Moslems presents difficulties if the object is to spread a Western way of life and Western fertility patterns. There are the further difficulties always found when people of widely different rates of increase are located in adjacent rigidly bounded areas.

The above demographic considerations lead to the conclusion that all parties concerned would benefit by the continuation of Jewish interest as a source of capital and skill for the region and of Jewish immigrants on a limited scale. On the other hand, on the basis of the growth prospect it appears that a catastrophe of major proportions is not outside the bounds of possibility if enthusiasm for a Jewish state should result in the really heavy immigration sometimes talked of. There are almost no limits to the population that could be supported, given someone to bear the cost. There are very real limits to the population that has any prospect of being self-supporting at reasonable levels of living over a substantial time. The higher the density, the greater the difficulties and the greater the cost. Certainly, when we realize that the present population will in all probability multiply to yield a density greater than that of prewar Germany in an area with a vastly smaller resource base and with a population much less prepared to participate effectively in modern industrial life, it becomes difficult to wish for an additional substantial increase. If heavy immigration should come about soon, there is even a considerable chance that the whole process

will break down and that within a decade or two there will be an emigration of Jewish population.

The demographic and economic situations suggest conclusions somewhat different from those frequently drawn by either the advocates of a Jewish state or by their Moslem opponents. Contrary to the usual Moslem view, Jewish immigration has not increased population pressure in Palestine. Indeed, it is precisely because of Jewish immigration that the region appears to have a reasonable chance of avoiding the development of very heavy population pressure. Increased production made possible by the introduction of Western capital, modern technology, and enterprise has already yielded dividends, and the pattern of internal migration and the decline of illiteracy and mortality are eloquent testimony that the Moslems have shared in the benefits. Moreover, the presence of the Jewish group with its urban industrial and commercial enterprise, its Western social ideals and small family patterns, should give maximum speed to the vital transition of the Moslem population. Indeed, in the surprisingly short span of twenty years of modernization Moslem birth rates already show signs of declining. In the presence of a more gradual modernization the usual lag in the decline of the birth rate behind the death rate results in a sustained period of rapid growth in which populations can increase many fold. The presence of the Jewish group as an agency for the rapid diffusion of new habits of living should hold this transition period within bounds. Immediately, of course, it has brought very rapid increases to the Moslem population because mortality has declined much and fertility only a little. However, the clue to the future is that the fertility of the Moslems has declined somewhat. It seems likely that the period of growth incident to the transition of birth and death rates from high to low will be held within manageable bounds, thanks to the presence of the Jewish group.

On the other hand, it is difficult to imagine the conditions under which Jews could become and remain a majority group in Palestine.

Moslems have every prospect of continuing to be the majority group. Should the Jews achieve a national state, it is unlikely that in the long run it could be maintained, either as part of the region, whose only hope for economic development is as the center of a substantial hinterland, or as a minority ruling group supported by outside power. Under these circumstances, the chances are great that the Jews, having made possible the development of a modern Palestine and a healthy and relatively prosperous country, would have no share in the ultimate fruits of their labors. They would have neither the good will nor the power required to remain in the area. The demographic and economic prospects of the region point to the need for the cooperative Jewish and Moslem development of Palestine as an integrated region—the trading and light manufacturing center of a Near East in which the process of modernization may be expected to go rapidly forward.

MEDICAL EVALUATION OF NUTRITIONAL STATUS[1]

XVI. ESSENTIAL NUTRIENTS IN DIETS OF HIGH SCHOOL STUDENTS ACCORDING TO SEX AND AGE AND FOR DIFFERENT CULTURAL GROUPS IN NEW YORK CITY

DOROTHY G. WIEHL AND KATHARINE BERRY

REQUIREMENTS for various food essentials are at a high level during the period of adolescent growth, and the need for some nutrients changes markedly. Data available, however, are very limited both as to requirements and consumption. In the present report, changes in consumption by age within this growth period are examined for a group of about 270 students in a private high school and for nearly 2,000 students in a public high school in New York City. Data on consumption by sex-age specific groups are presented for five nutrients, namely, protein, iron, calcium, vitamin A, and ascorbic acid.

Dietary data for pupils from the private and public schools afford a comparison of consumption levels for two groups representing widely different income levels. The students in the private school are from families of relatively high incomes, while those in the public high school in the lower East Side district of New York are from families whose economic status ranged from dependence on relief to moderately high wage levels.

Within the public school group, two distinct cultural groups are represented. The majority of these pupils were members of orthodox Jewish families and were American-born children with one or both parents born in a foreign country. A smaller homogeneous group is composed of American-born children of Italian parentage,

[1] This paper is the sixteenth of a series from a cooperative investigation by the Milbank Memorial Fund; the New York City Department of Health; the Division of Public Health Methods, United States Public Health Service; and the Cornell University Medical College, Department of Public Health and Preventive Medicine and Department of Pediatrics.

The cooperating agencies were assisted in carrying out this investigation by the Work Projects Administration for the City of New York.

one or both parents having been born in Italy. In a second section in this report, dietary differences between these two groups are considered and a comparison is made with the private school boys and girls, the majority of whom were from nonorthodox Jewish families.

Description of Data

The diet records which are used for this report were collected as a part of the investigation on Medical Evaluation of Nutritional Status. The investigation has been described (1) and the methods of collecting and processing the diet histories have been discussed in detail in earlier reports (1,2,3).

The survey was conducted in the public school during the months from March through June 1939 and from October 1939 through February 1940. About one-half of the records were collected in each period. In the private school, the survey was conducted between February 27 and April 4, 1940.

All diet records were obtained by the interview method. In the public school a two-day record was furnished by pupils interviewed in the winter months and a one-day record by those surveyed in the spring. For all the public school pupils an additional two-day record was obtained in the home from the mother or some other member of the family who estimated the amount of food eaten by the pupil. The pupil and family records were combined to furnish a three or four-day record of the child's food consumption. For the private school pupils, only the two-day record given by the child was obtained.

Reported amounts of foods consumed are approximations. For some food items and even for entire records, the error is probably of considerable magnitude. There is no evidence of, and no reason to expect, any bias through more frequent over-estimate than under-estimate of quantities and size of servings, or vice versa. In the present analysis, comparisons are made between the average intakes of different nutrients for groups of students, and it is believed that

these group averages furnish reasonably accurate measures of consumption levels which are characteristic of the groups.

Information also was obtained from each pupil concerning any vitamin or mineral preparation taken. In the private school, about one-fifth of the pupils were taking some preparation which furnished iron, calcium, or one or more of the vitamins. In the public school about 5 per cent were taking a supplement and nearly all of these were taking cod liver oil. In the following tables on nutrient intake, that obtained from supplements has not been included. This report is concerned only with the nutrient content of the diet.

Each pupil was asked whether the reported diet was typical of the usual diet and whether he, or she, was on a special diet for any medical reason or in order to lose weight. A number of diet records for private school pupils were discarded because the two-day record was described as not typical and an explanation was given or because the pupil was on a special or reducing diet. Since the private school group was relatively small, these unusual diets could significantly affect the averages. The public school pupils reported very few special diets and reported the diets as unusual much less frequently than the private school pupils. In the age tabulations for the public school students unusual dietary histories were not excluded since these were largely Saturday or Sunday records which, it was thought, could properly be included in obtaining average intake values for a large group. For the comparison of cultural groups, only samples of the public school records are used and the selection of these samples is described later.

I. Nutrient Values by School, Sex, and Age

In Tables 1 and 2, statistical values derived from the frequency distributions for the estimated amounts of the five specific nutrients in individual diets are presented for boys and girls at specific ages in each school. Values shown for each distribution are: mean or average daily intake of the nutrient; standard deviation, a measure

of variation among individual diets, approximately two-thirds of the individual values being within the range of the mean plus and minus the standard deviation; and the coefficient of variation (CV), which is the standard deviation divided by the mean expressed as per cent and indicates the variation *relative* to the mean. In addition to these values, for vitamin A and ascorbic acid the median of

Table 1. Average daily amounts of protein, iron, and calcium in diets of high school students classified according to sex and age and at two income levels, New York City, 1939-1940.

School and Age	Number	Protein-Grams			Iron-Milligrams			Calcium-Grams		
		Mean	St. Dev.	C.V. Per Cent	Mean	St. Dev.	C.V. Per Cent	Mean	St. Dev.	C.V. Per Cent
	BOYS									
Private School										
Total	153	119	31.6	26	20.5	5.98	29	1.46	0.44	30
11-12 Yrs.	26	103	26.8	26	19.2	5.63	29	1.33	0.31	23
13	35	117	30.5	26	19.4	5.23	27	1.29	0.37	29
14-15	49	114	32.3	28	19.7	6.33	32	1.45	0.41	28
16-18	43	138	26.3	19	23.2	5.68	25	1.68	0.50	30
Public School										
Total	1,092	103	25.2	24	15.5	4.20	27	1.19	0.42	35
13 Yrs.	25	96	23.9	25	14.6	4.33	30	1.22	0.34	28
14	135	101	20.9	21	15.0	3.51	23	1.19	0.38	32
15	253	100	24.0	24	15.2	4.46	29	1.17	0.40	34
16	320	103	25.8	25	15.6	4.30	27	1.18	0.41	34
17	256	106	26.7	25	15.9	4.05	26	1.21	0.45	37
18-19	103	107	26.3	25	15.7	4.41	28	1.22	0.47	39
	GIRLS									
Private School										
Total	119	88	21.0	24	15.0	4.41	29	1.13	0.37	33
11-12 Yrs.	20	86	13.9	16	14.7	4.04	27	1.19	0.24	20
13	20	83	18.8	23	12.7	2.93	23	1.17	0.27	23
14-15	43	88	24.2	27	15.3	4.98	32	1.10	0.47	43
16-18	36	91	21.5	24	15.9	4.28	27	1.13	0.37	33
Public School										
Total	901	79	19.2	24	12.0	3.52	29	0.98	0.34	35
13 Yrs.	24	86	20.4	24	13.9	5.48	40	1.13	0.40	35
14	115	82	19.1	23	12.4	3.55	29	1.05	0.32	30
15	282	79	19.3	25	11.8	3.37	29	1.00	0.36	36
16	284	78	18.4	24	11.9	3.30	28	0.93	0.31	34
17	152	79	19.9	25	12.2	3.77	31	0.97	0.35	36
18-19	44	76	19.0	25	11.2	3.18	28	0.94	0.32	34

each distribution is shown. The median is a central value which divides the distribution into two equal parts, the lower and higher 50 per cent of the total number.

Requirements for these five nutrients are related to the body size

Table 2. Average daily amounts of vitamin A and ascorbic acid in diets of high school students classified according to sex and age and at two income levels, New York City, 1939-1940.

School and Age	Number	Vitamin A—International Units (Thousands)				Ascorbic Acid—Milligrams			
		Median	Mean	St. Dev.	C.V. Per Cent	Median	Mean	St. Dev.	C.V. Per Cent
	BOYS								
Private School									
Total	153	8.9	11.4	7.92	69	126	134	46.6	35
11-12 Yrs.	26	10.0	11.8	7.57	64	135	133	46.0	35
13	35	8.5	9.7	5.52	57	121	125	37.2	30
14-15	49	8.5	11.9	9.57	80	126	137	53.0	39
16-18	43	10.2	12.1	7.76	64	131	138	46.4	34
Public School									
Total	1,092	4.3	6.0	5.01	84	84	88	40.6	46
13 Yrs.	25	4.9	7.9	7.02	89	92	92	43.1	47
14	135	4.1	5.9	4.97	84	86	91	36.8	41
15	253	4.1	5.5	4.34	79	81	88	41.7	47
16	320	4.4	5.9	4.54	77	88	91	40.6	45
17	256	4.5	6.5	5.80	90	82	86	41.7	48
18-19	103	4.2	6.0	5.24	88	78	83	39.2	47
	GIRLS								
Private School									
Total	119	5.8	7.9	5.74	73	113	116	39.2	34
11-12 Yrs.	20	7.5	8.1	5.40	67	108	103	32.7	32
13	20	5.5	7.1	5.15	72	110	110	40.3	37
14-15	43	5.5	8.2	6.14	75	112	115	37.2	32
16-18	36	6.0	7.9	5.94	75	132	127	43.0	34
Public School									
Total	901	3.8	5.3	4.29	81	75	81	40.2	50
13 Yrs.	24	4.3	5.7	3.82	67	90	92	31.2	34
14	115	3.8	5.2	3.99	76	77	82	36.2	44
15	282	3.9	5.2	3.94	75	76	81	38.3	48
16	284	3.7	5.3	4.81	90	73	78	40.1	51
17	152	3.9	5.5	4.53	83	77	86	45.0	53
18-19	44	3.2	4.3	2.75	63	73	79	49.4	63

of the individual and consumption tends to vary with size. Therefore, in Table 3, the daily intake per kilogram of body weight is shown for each of the five nutrients.

In Figure 1, age variation in consumption levels and in the average intakes per kg. for each of the five nutrients is shown graphically for boys in each school. The same data for girls are given in Figure 2. The vertical scale in these charts is logarithmic and, therefore, the

Table 3. Average daily intake per kg. of five nutrients for high school students classified according to sex and age and at two income levels, New York City, 1939-1940.

School and Age	Number	Protein Grams		Iron Micrograms		Calcium Milligrams		Vitamin A Int. Units		Ascorbic Acid Milligrams	
		Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.	Mean	St. Dev.
	BOYS										
Private School											
Total	153	2.11	.655	358	124	25.1	8.38	202	140	2.38	.928
11-12 Yrs.	26	2.17	.698	399	138	27.5	8.20	245	155	2.84	1.082
13	35	2.34	.769	383	130	25.6	8.88	195	114	2.49	.885
14-15	49	1.93	.636	332	122	24.0	8.01	202	164	2.30	.963
16-18	43	2.09	.483	343	103	24.5	8.43	183	117	2.09	.699
Public School											
Total	1,034	1.70	.462	254	79	19.7	8.25	99	85	1.45	.724
13 Yrs.	25	1.86	.553	288	89	23.6	7.18	152	126	1.76	.875
14	132	1.82	.472	270	79	22.0	9.75	104	90	1.63	.733
15	242	1.67	.471	253	84	19.3	8.10	92	78	1.46	.787
16	291	1.69	.467	255	78	19.3	7.27	98	75	1.49	.704
17	246	1.67	.423	247	74	19.1	8.48	102	94	1.36	.660
18-19	98	1.66	.455	241	73	18.7	8.19	92	84	1.27	.641
	GIRLS										
Private School											
Total	119	1.66	.440	278	87	21.1	7.83	149	104	2.22	.758
11-12 Yrs.	20	1.82	.327	307	95	25.1	5.78	170	101	2.25	.770
13	20	1.61	.461	248	77	22.6	6.78	139	97	2.15	.860
14-15	43	1.66	.490	282	90	20.3	8.88	153	105	2.17	.663
16-18	36	1.61	.415	275	81	19.1	7.36	139	111	2.29	.823
Public School											
Total	868	1.50	.470	228	87	18.5	7.69	97	79	1.53	.812
13 Yrs.	23	1.83	.744	300	165	24.0	12.41	125	97	1.89	.749
14	114	1.60	.488	242	86	20.6	7.43	101	75	1.58	.797
15	271	1.48	.455	222	77	18.7	7.90	96	68	1.50	.748
16	272	1.46	.444	222	76	17.3	6.94	97	85	1.47	.788
17	146	1.47	.456	231	106	18.0	7.37	98	88	1.58	.883
18-19	42	1.49	.458	214	72	18.0	7.35	87	61	1.51	1.097

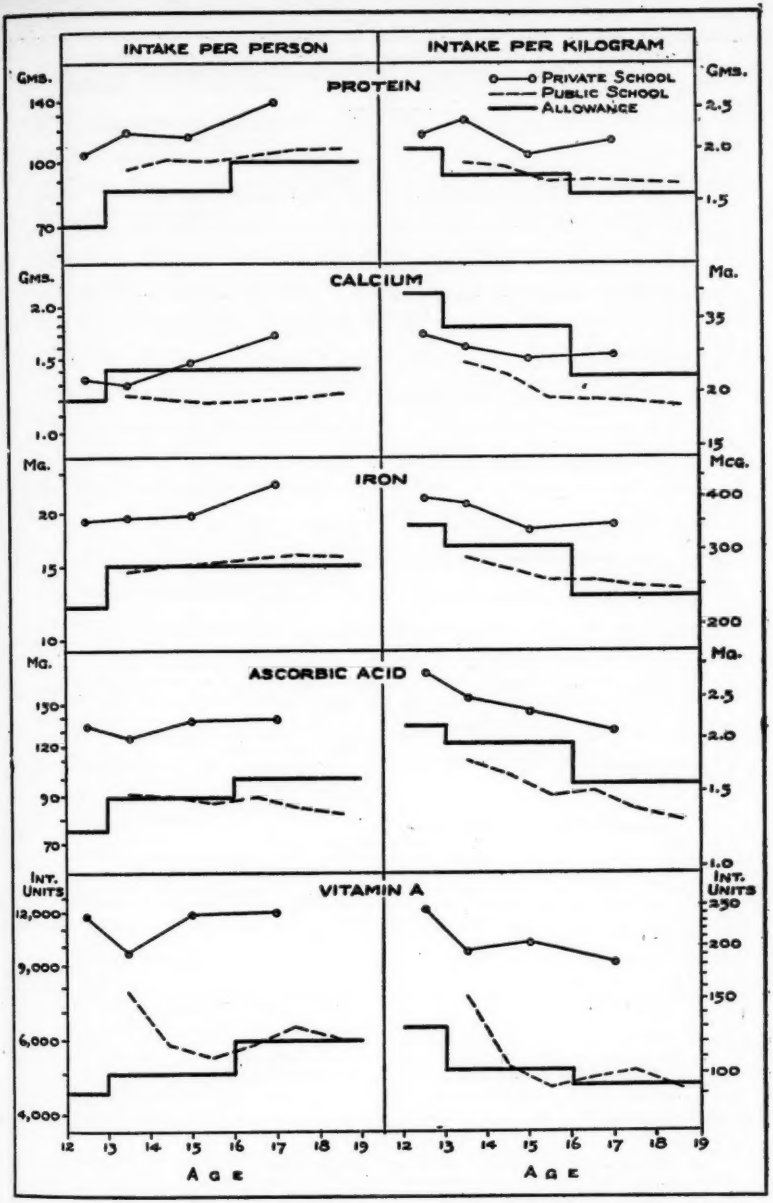

Fig. 1. Boys. Average daily intake of five nutrients at different ages by boys in a public and in a private high school in New York City compared with age-specific recommended allowances. Vertical scale is logarithmic.

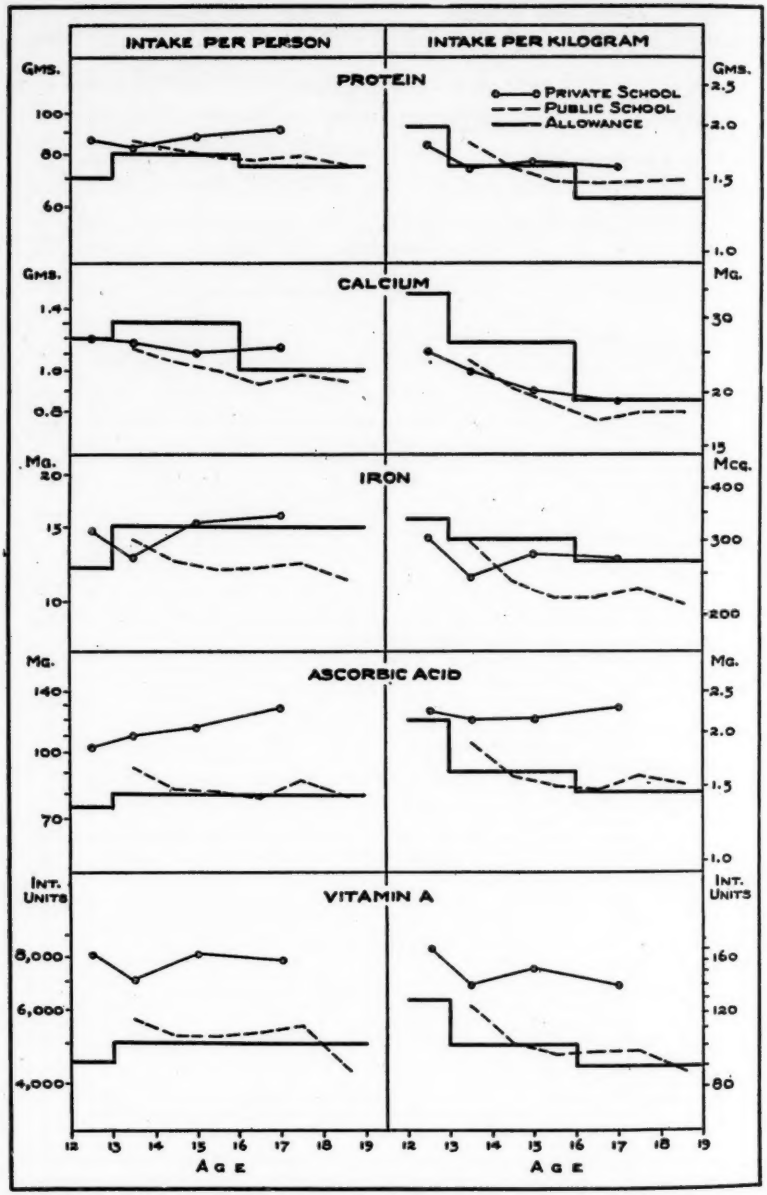

Fig. 2. Girls. Average daily intake of five nutrients at different ages by girls in a public and in a private high school in New York City compared with age-specific recommended allowances. Vertical scale is logarithmic.

difference in level between any two points plotted represents a proportional or percentage difference. In all age curves, regardless of differences in levels and in scales for different nutrients, an equal slope of lines indicates an equal percentage change between two points in the age curves. Similarly, the spread between the age curves for private and public school pupils represents a percentage difference and equal distances between the curves always indicate equal proportional differences in level of intake. Thus, differences in intake between boys and between girls in the two schools and for all nutrients can be compared, on a relative basis, from the charts; and relative changes from age to age for boys and girls and for the various nutrients are directly shown.

It will be of interest to compare the mean consumption levels of these groups for the different nutrients with the allowances recommended by the Food and Nutrition Board of the National Research Council (4). Therefore, the allowances also are shown in Figures 1 and 2. The allowances per kg. shown on the charts were derived by dividing the recommended allowances by the average weight of boys and girls at the central year of age within a specific age group. Average weights at ages 11, 14, and 17 years were used, and are those given by Roberts (5).

INTAKE OF NUTRIENTS

Protein. The amounts of protein per day consumed on the average by boys in both schools increased as age increased and the variation among means at different ages was statistically significant (*see* Table 4).[2] The increase in intake with age was much greater for

[2] The statistical significance of the variation among means for intake at different ages for each of the school and sex classes was tested by Fisher's method (6) of analysis of variance. Since there was no 12-year-old group in the public school, age variation in the private school was tested for ages 13 years and older. The results are summarized in Table 4, which gives the probability that the observed differences in means at different ages for any class would occur by chance. Thus, the probability (P) given indicates the chances in 100 that a given set of means by age would occur if each age group were a random sample drawn from the total population of any school-sex class. If P is .05 or less, i.e., the chances are 5 or less in 100 that the age-means would arise from chance, the age differences are considered significant.

the private school boys. The average protein intake varied from 103 gms. per day at age 12[a] to 138 gms. at ages 16 to 18 years in the private school group and the amount varied from 96 gms. at age 13 years to 107 gms. at ages 18-19 years in the public school group. At every age, boys in the public school had a lower average intake of protein than the private school boys.

If intake of protein per kilogram of weight is considered, the trend in the mean intake according to age is reversed for boys in both schools, and the variation among mean values at different ages is statistically significant. The per kg. intake of protein was highest

Table 4. Summary of changes in intake of specific nutritents as age increases and statistical significance of variation among means for daily intake at specific ages for pupils 13 to 19 years old.

Sex and School	Protein		Iron		Calcium		Vitamin A		Ascorbic Acid	
	Change[1]	P[2]	Change	P	Change	P	Change	P	Change	P
	Average daily amounts in diets									
Boys										
Private School	Inc.	<.001	Inc.	<.01	Inc.	<.001	Inc.	>.05		*
Public School	Inc.	.01-.05	Inc.	>.05		*	No C.	>.05		*
Girls										
Private School		*	Inc.	.01-.05		*		*	Inc.	>.05
Public School	Dec.	>.05	Dec.	.01-.05	Dec.	<.01		*	Dec.	>.05
	Daily amount per kilogram of weight									
Boys										
Private School	Dec.	.01-.05	Dec.	>.05		*		*	Dec.	>.05
Public School	Dec.	.01	Dec.	.01-.05	Dec.	<.01	Dec.	.01-.05	Dec.	<.01
Girls										
Private School		*	Inc.	>.05	Dec.	>.05		*		*
Public School	Dec.	<.01	Dec.	<.01	Dec.	<.01		*	Dec.	>.05

[1] Increase with age is indicated by "Inc." and a decrease by "Dec.", no trend by "No C."

[2] P is the probability that the observed differences among age means would occur if age classes were random samples from a homogeneous population.

* Variance among age means was less than that for within age classes.

[a] Of the four boys and five girls in the private school group aged 11 years, all were 11 years and 9 to 11 months old except one girl who was 11 years and 5 months.

at age 13 years in both schools. In the private school, intake for the two age groups 14-15 and 16-18 years differed very little, and in the public school, intake was at a constant level from age 15 to 18 years.

For girls, variation in consumption of protein by age was not consistent for the two schools, and not significant statistically for either school group. In the private school, the mean intake of protein increased from 83 gms. per day for girls aged 13 years to 91 gms. for those aged 16 to 18 years, but in the public school protein intake tended to decrease with age from 86 gms. at age 13 years to 76 gms. at ages 18-19 years. Thus, the youngest girls in the two schools had about the same consumption of protein, but as age advanced the intake of protein by public school girls became definitely less than that of the private school girls.

The age trend in protein intake per kg. for girls in the public school was similar to that for boys and age variation is significant. The highest intake was at age 13 years, intake declined at ages 14 and 15 years and then remained at a constant level. For girls in the private school there was no significant difference by age for protein intake per kg. for ages 13 and older.

Iron. Age trends in the amount of iron in the diet are very similar to those for protein. In the private school group, boys aged 16-18 years obtained, on the average, a significantly larger amount of iron, 23 mgs. per day compared with 19 to 20 mgs. in diets of the younger boys. In the public school group, boys increased their consumption of iron slightly at older ages, but the means varied only from 14.6 to 15.9 mgs. at different ages, and the variation is not significant. For girls in the private school the increase in iron from 12.7 mgs. at age 13 years to 15.9 mgs. at 16-18 years was significant statistically. An opposite and fairly consistent trend is shown for girls in the public school. Their mean intake of iron decreased from 13.9 mgs. at age 13 years to 11.2 mgs. at 18-19 years, and the variation among means by age is significant.

For both boys and girls it is clearly shown in Figures 1 and 2 that

the differences between private and public school pupils with respect to dietary iron are greater than those found for protein. Throughout the age range, private school pupils had a significantly higher average intake of iron than the public school pupils with the single exception of girls aged 13 years.

Age differences in iron intake on a per kg. basis are not significant for either boys or girls in the private school. However, for boys in the public school the slight increase in per person intake was not sufficient to balance growth and there is a significant decrease with age in the iron intake per kg. In the case of the public school girls, the downward trend at ages 13 to 16 years is greater for the per kg. intake than for the per person intake and both measures of intake show significant age variation.

Calcium. Private school boys increased their consumption of calcium with age very significantly, the mean values rising from 1.29 gms. at age 13 years to 1.68 gms. at 16-18 years. Boys in the public school, on the other hand, show no change in calcium intake with age and their highest mean value is slightly lower than the lowest mean value for the private school boys. Among girls in the private school, there was no significant variation in calcium intake with age; but girls in the public school significantly reduced their consumption of calcium as age increased. At age 13 years there was little difference in the calcium supplied by diets of private and public school girls, 1.17 gms. and 1.13 gms., respectively, but at older ages the public school girls had significantly less calcium than those in the private school.

Calcium intake per kg. did not vary significantly with age for either boys or girls in the private school. Both boys and girls in the public school have a significant downward trend in calcium consumption per kg. as they become older.

Vitamin A. There are no significant changes with age in the vitamin A content of the diets of boys or girls in either school. The same lack of significant variation is found for mean vitamin A

values per kg. except among boys in the public school, and for this group the high value for 13-year-old boys accounts entirely for the significant age variation.

Extremely wide variation in vitamin A content of individual diets is indicated by the standard deviations and coefficients of variation shown in Table 2. Because of this great variation in individual records, averages are reliable only within wide limits and, therefore, only very big differences in the average values will be statistically significant. The median values for vitamin A in the diets at different ages, given in Table 2, are less influenced by extreme values for dietary vitamin A than the means. These median values, as well as the mean values, do not show any consistent age trends for vitamin A intake.

Average vitamin A values for diets of the private school pupils are much higher than those for public school pupils, and the percentage differences are greater than for any of the four other nutrients.

Ascorbic Acid. No significant variation with age is shown for ascorbic acid in the diets of boys or girls in either school. On a per kg. basis, boys in the public school had a significant decrease in the amount of ascorbic acid, but for boys in the private school and for girls in both schools, the differences in intake by age are not significant.

At every age both boys and girls in the private school had a much higher intake of ascorbic acid than pupils in the public school. The percentage differences in ascorbic acid values for diets of pupils in the two schools are greater than differences in intake shown for protein, iron, or calcium, but not as large as for vitamin A.

AVERAGE INTAKE COMPARED WITH ALLOWANCES

It is of interest to note not only whether average consumption of these food essentials was as high as the recommended allowances but also whether intake tended to vary according to age in accord-

ance with differences in allowances at these ages.[4] It may reasonably be assumed that unlimited amounts of foods were available to the private school group in contrast to the public school group which included many children from families forced to budget food expenses carefully. Food consumption by those in the former group would be sufficient to satisfy the appetite and desire for food, and levels of nutrient content reflect the dietary habits or food preferences of such a privileged group. But consumption levels for the latter group are the result of the composite effect of appetite, availability of food, and dietary habits. Intake levels for each of the five nutrients in relation to the allowances are shown in Figures 1 and 2 for intake per person and intake per kg.

For four of the five nutrients, namely, protein, iron, vitamin A, and ascorbic acid, the average daily intake per person for boys in the private school greatly exceeds at each age the recommended age-specific allowances. In the case of calcium, the mean intake approximates the allowance except at ages 16 years and older when it exceeds the allowance. When intake at specific ages relative to the corresponding age allowance is considered, it is of particular interest that the private school boys aged 11-12 years had an average intake for each of the five nutrients approximately equal to the average intake of boys 13 years old and of the 14-15-year-old group, although the allowance at ages 11-12 years is lower for each of the nutrients. The average values for protein, iron, and calcium at ages 16 years and older were higher than those for younger boys, but only the allowance for protein increases for the age group 16 years and over.

The intake per kg. relative to the allowance per kg. affords more significant information concerning the consumption levels. On a per kg. basis, the boys in the private school had average intakes of protein, iron, vitamin A, and ascorbic acid in excess of the allowance per kg. but their average intake of calcium was less than the allow-

[4] Data on the proportions of the public school group with dietary values for essential nutrients below allowances have been published (2) and also are included, together with similar data for the private school group, in a bulletin of the National Research Council (7).

ance except at ages 16 years and older. It is clearly shown in Figure 1 that the excess in the average intake per person over the allowance is greater than the excess in the intake per kg. This is very striking at age 12 years. For example, the total protein intake per person is 47 per cent higher than the allowance for boys 10-12 years of age, but on a per kg. basis the intake of the 12-year-olds is only 8.5 per cent above the allowance. Thus, much of the excess intake per person was associated with greater than average size for these 11-12-year-old boys,[5] and was necessary if they were to receive the per kg. allowance.

For boys in the public school, levels of intake for these five nutrients tend to be either approximately equal to or below the allowances. The principal exception to this is an intake of protein at ages 13-15 years in excess of the allowance, average daily amounts being only slightly less at these ages than at ages 16 years and over and about equal to the allowance for these older ages. Iron intake was equal to or very slightly above the 15 mg. allowance at all ages. Calcium values were definitely less than the allowance at every age. Ascorbic acid intake was equal to the allowance at ages 13 to 15 years, but less than the allowance at older ages. The average vitamin A values at each age are close to the allowance except at age 13 years, but the median values shown in Table 2 are much lower than the allowance and the medians are more typical of the usual vitamin A content of these diets.

When nutrient values for public school boys are expressed as amounts per kg., the ratio of intake to allowance for boys 16 years and older is about the same as the ratio of total intake per person to daily allowance. Thus, at these ages the boys weighed on the average

[5] The 11 and 12-year-old boys and girls in the private school were much taller and heavier, on the average, than the average heights and weights found in standard tables. They also weighed more than the average weights from standard tables for children of their age and height. They were in high school and may have been advanced for their age in physical growth as well as in school as compared with other children in their own economic class. On the other hand, the pupils over 12 years of age also were taller and heavier than average heights and weights, although the difference became smaller as age increased.

about the same as the standard weight. At ages 13 to 15 years the ratio of intake per kg. to allowance is lower than the ratio for intake per person, indicating that at these ages the public school boys were heavier than the standard weights.

On the basis of average intake per kg., public school boys had less than the allowance for calcium and ascorbic acid throughout the age period 13-19 years; they had less than the allowance for iron at ages 13-15 years, and very slightly more than the allowance at ages 16 years and older; their intake of protein did not differ markedly from the allowance at any age; and their intake of vitamin A also did not differ significantly from the allowance at any age.

Allowances per kg. for each of the five nutrients are reduced as age increases. In general, the reduction in allowance is greater than the reduction in average consumption levels for boys in both the private and public high schools.

For girls, allowances per day per person for iron, ascorbic acid, and vitamin A are constant from age 13 years to 20 years. In both schools there was no significant variation among age-specific mean values for either vitamin. There was a tendency for iron values to increase with age for diets of the private school girls and to decrease with age for public school girls. For protein the allowance is somewhat lower at ages 16 years and over than at 13 to 15 years, but levels of consumption did not vary significantly for girls in either school. The allowance for calcium at ages 16-20 years is 23 per cent less than at ages 13-15 years, and among public school girls a decrease in intake with age occurred. For the private school girls, however, there was no variation in calcium intake at these ages.

The private school girls had diets which did not furnish these nutrients in excess of the allowances to the same extent as the boys' diets. For girls the intake of ascorbic acid and vitamin A was greatly in excess of the allowances. The intake of protein also was greater than the allowance but the excess was much less than for boys. Iron values were about equal to the allowance at ages 14 years and over

and were less than the allowance at age 13 years. Calcium values were less than the allowance except at ages 16 years and over. If intake is expressed as amount per kg., the ratio of intake to allowance is reduced as compared with the ratio for total intake per person, as it was for boys. For the 11-12-year-old girls the effect is especially marked, and an intake per person much higher than the allowance was required to obtain an intake per kg. equal to the allowance per kg. The diets of these 11-12-year-old girls were below the allowance per kg. in protein, iron, and calcium.

The average values for diets of the public school girls at different ages deviated only slightly from the allowances for protein, ascorbic acid, and vitamin A. For vitamin A, however, the median values are much below the allowance. Average values for iron and calcium are below allowances at every age from 13 to 19 years, the deficiency for iron being least at ages 13 and 14 years and that for calcium being least at ages 16 and over because of the reduced allowance at these ages. Expressed as amounts per kg., average intakes of protein, ascorbic acid, and vitamin A are fairly close to the allowances per kg.; average intakes of iron are much less than the allowances except at age 13 years; and average intakes of calcium are definitely below the allowances at every age.

VARIATION AMONG INDIVIDUAL DIETS

The variability among individual diets in the amounts of these five food essentials, which is indicated by the standard deviations and coefficients of variation shown in Tables 1 and 2, is the result of errors in estimating individual intake and of real differences in consumption levels for the days of record. Since the error variation is unknown, no good measure of the variation in consumption is available. However, if it is assumed that the variation due to errors in reported amounts of food and in the estimates of nutrient values is of about equal magnitude for the different groups of pupils, the larger the standard deviation the greater the prevalence of diets which differed markedly from the average level. Although in-

dividual diets vary widely from day to day and from week to week and the average diet of the majority over a considerable period of time may approximate the group average, a relatively wide variation in dietary levels for the two to four-day period of record strongly suggests that a comparatively large number of the group will have an average consumption level over a longer period of time which differs from the group average. Marked variability among individual diet values is of increased importance if the average level for the group is barely equal to or less than the requirement level, since diets deviating below the mean will tend to be deficient. On the other hand, if the average consumption level is well above the requirement level, as is generally true of the private school group, wide deviation from the mean may occur without the diet being sub-standard.

For all school, sex, and age groups there was a fairly consistent tendency for the standard deviations for protein and iron intake to increase as the average increased and to change in proportion to a change in the mean intake level. Thus, regardless of the higher protein consumption of boys than of girls and higher values for the private school pupils than for public school pupils, nearly all the standard deviations are close to 25 per cent of the mean. For iron there is the same uniformity in the coefficients of variation which are slightly higher than for protein, the median coefficient for all sex-age groups being 28 per cent.

In the case of calcium, the pattern of a constant ratio between the standard deviation and the average intake is modified by a tendency for the ratio to increase somewhat at older ages in some of the school-sex groups. For boys in the public school there was a consistent increase in the coefficients of variation from 28 per cent at age 13 to 39 per cent at ages 18-19 years. A similar increase with age in the relative variation in calcium content of diets is not shown for public school girls, the coefficients being 30 to 36 per cent and comparatively high. For private school boys the coefficient was lower

at age 12 years (23 per cent) than at other ages, for which the coefficients were from 28 to 30 per cent; and for girls the coefficients were 20 and 23 per cent at 12 and 13 years of age as compared with 43 and 33 per cent for ages 14-15 years and 16-18 years. The public school boys and the private school girls did not have any significant change with age in their average intakes of calcium, but in both groups variation among individual diets increased with age.

The extremely large variation for vitamin A in the diets has already been mentioned. Relative variation ranges from 57 to 90 per cent and follows no pattern in relation to age or average intake. The markedly lower medians than means for vitamin A, shown in Table 2, indicate that these distributions included a number of diets with extremely high vitamin A values which raised the means and also account for the large standard deviations. These extreme vitamin A values occur when the diet includes such foods as liver, or vegetables of very high vitamin A content. From day to day the vitamin A content of the diet of an individual may shift from very high to low because of the very great range in the vitamin A content of different vegetables. Since regular or frequent use of vegetables that are good sources of vitamin A is so important in obtaining adequate amounts of this nutrient, diet records for only a few days furnish insufficient data for obtaining a valid index of an individual's consumption level.

Variation in the amount of ascorbic acid in diets was fairly similar for both schools, and the standard deviations show no consistent change in association with different average levels for the various school-sex-age groups. Since pupils in the private school had a much higher average intake of ascorbic acid, variation in the ascorbic acid content of diets relative to the mean level of intake was less for private school pupils than for the public school pupils. The coefficients of variation for private school pupils varied around 35 per cent; but in the public school the coefficients for boys were from 41 to 48 per cent and for girls ranged from 34 to 63 per cent.

II. Comparison of Cultural Groups

Dietary values for the Jewish and Italian children in the public school are compared in this section. Each of these cultural groups is also compared with the private school group. In order to make the three groups as comparable as possible, certain selections were made from the records available. Only the two-day diets reported by the pupil were available for the private school pupils, so the records used for the public school groups also are restricted to the two-day diets reported by the pupil. Diets reported as unusual are excluded from all groups. To reduce the seasonal variation, public school records taken between October 25, 1939 and January 30, 1940 are compared with the private school records taken between February 27 and April 4, 1940.

Age distributions could not be matched for the three cultural groups, but only ages 14 years and over have been included to eliminate weighting the private school group with younger children. For this age range, all available records for the private school pupils and for Italian girls are included, and nearly all for Italian boys. The one hundred records for Jewish boys and for girls were

Table 5. Age distributions of children in the private school and in the two cultural groups in the public school for whom diet values are compared.

Age	Percentage Distribution—Boys			Percentage Distribution—Girls		
	Private School	Public School		Private School	Public School	
		Jewish	Italian		Jewish	Italian
Total	100.0	100.0	100.0	100.0	100.0	100.0
14 Yrs.	28.3	22.0	19.0	26.6	22.0	21.7
15	25.0	28.0	21.0	27.8	41.0	50.0
16	23.9	33.0	38.0	25.3	29.0	20.0
17–18	22.8	17.0	22.0	20.3	8.0	8.3
Number of Persons	92	100	100	79	100	60

selected to approximate the distributions of Italian pupils by date of record and to furnish age distributions fairly similar to those for Italians. The age distributions of the three cultural groups are shown in Table 5. The dissimilarities in the age distributions are not sufficient to affect the average consumption values for the various nutrients, especially in view of the limited variation in intake among ages 14 years and over shown in the previous section.

Small differences in income at low-income levels may affect the amount and choice of foods purchased. Therefore, Table 6 shows the estimated weekly income of families of the Jewish and Italian children whose diets are compared. Information given in the home, usually by the child's mother, on wages of each working member of the family and on income from all other sources was the basis for estimating total family income. The percentage distributions according to income for these Italian and Jewish families differ very little.

Average values for intake of the five nutrients with standard errors of the means are shown in Table 7 for the three cultural groups; and the ratios of means for public school children to those for private school children, and for Italians to Jewish children in the

Table 6. Percentage distribution of the estimated total weekly income reported by families of selected Jewish and Italian children in the public school.

Total Weekly Income Reported By Families	Per Cent With Specified Weekly Income			
	Boys		Girls	
	Jewish	Italian	Jewish	Italian
Total	100	100	100	100
Less Than $10	24	28	30	24
$10–$34	44	39	40	47
$35–$49	21	21	20	21
$50 or More	11	12	10	8
Number of Families Reporting Income	100	100	100	59[1]

1 Income unknown for family of one girl.

public school are given in Table 7. The statistical probabilities for differences between cultural groups are shown in Table 8. Consumption levels are compared graphically in Figure 3.

Table 7. The estimated daily intake of five nutrients by the private school boys and girls and by Jewish and Italian boys and girls in the public school; and the ratios of the mean intake of each nutrient by the public school groups to that by the private school, and of the mean intake by Italian to Jewish boys and girls in the public school.

Nutrient and Cultural Group	Mean Intake and Standard Error		Ratio to Intake by Private School Group x 100		Ratio to Intake by Jewish Group x 100	
	Boys	Girls	Boys	Girls	Boys	Girls
Protein (Grams)						
Private School	125±3.31	90±2.58	100	100		
Public School—Jewish	108±2.50	76±2.06	86	84	100	100
Public School—Italian	100±2.99	74±3.32	80	82	93	97
Iron (Milligrams)						
Private School	21.3±.652	15.6±.523	100	100		
Public School—Jewish	16.5±.476	11.6±.387	77	74	100	100
Public School—Italian	14.6±.529	11.7±.615	69	75	88	101
Calcium (Grams)						
Private School	1.56±.049	1.11±.048	100	100		
Public School—Jewish	1.19±.036	.93±.031	76	84	100	100
Public School—Italian	1.00±.046	.79±.046	64	71	84	85
Vitamin A, Total (I.U.)						
Private School	12,033±910	8,070±676	100	100		
Public School—Jewish	5,544±491	3,915±325	46	49	100	100
Public School—Italian	7,858±954	5,607±787	65	69	142	143
Preformed Vitamin A (I.U.)						
Private School	3,167±222	1,955±163	100	100		
Public School—Jewish	2,367±219	1,615±121	75	83	100	100
Public School—Italian	1,608±130	1,219±127	51	62	68	75
Provitamin Carotene (I.U.)						
Private School	8,893±828	6,088±625	100	100		
Public School—Jewish	3,183±416	2,264±276	36	37	100	100
Public School—Italian	6,250±907	4,391±732	70	72	196	194
Ascorbic Acid (Mgs.)						
Private School	117±4.70	106±4.26	100	100		
Public School—Jewish	83±3.95	66±3.82	71	62	100	100
Public School—Italian	60±4.73	48±4.04	51	45	72	73

Protein. The average amount of protein supplied by the reported diets of private school children was 125 gms. for boys and 90 gms. for girls. In the public school the reported diets furnished, on the average, amounts of the nutrient which were from 14 to 20 per cent less than the amount in diets of private school pupils. Although the differences in mean intakes of protein were generally less marked than for the other nutrients, both Jewish and Italian children in the public school had significantly less protein than the private school pupils.

Jewish and Italian girls in the public school had approximately the same mean intake of protein, 76 and 74 gms., respectively. The average intake of 100 gms. of protein by Italian boys was only 7 per cent less than the average for Jewish boys, yet this difference is statistically significant.

Iron. Because of the high average intake of iron (21.3 mgs.) by private school boys, the ratios of the intake values for public school boys to the private school values are lower than for protein, and the differences in average intake between boys in the private school

Table 8. Summary of results of tests of significance of difference between mean intakes of five nutrients shown in Table 7. For each sex, diet values for the private school group are compared with those for Jewish and Italian pupils in the public school, and diet values for the two public school groups are compared.

Cultural Groups Compared	Probability (P) of Difference in Means Occurring by Chance						
	Protein	Iron	Calcium	Vitamin A			Ascorbic Acid
				Total	Preformed	Carotene	
Boys							
Private School—Jewish	<.001	<.001	<.001	<.001	.01-.02	<.001	<.001
Private School—Italian	<.001	<.001	<.001	<.01	<.001	.01-.05	<.001
Jewish—Italian	.01-.05	<.01	<.01	.01-.05	<.01	<.01	<.001
Girls							
Private School—Jewish	<.001	<.001	<.01	<.001	>.05	<.001	<.001
Private School—Italian	<.001	<.001	<.001	.01-.02	<.001	>.05	<.001
Jewish—Italian	>.70	>.90	<.01	.01-.05	.01-.05	<.01	<.01

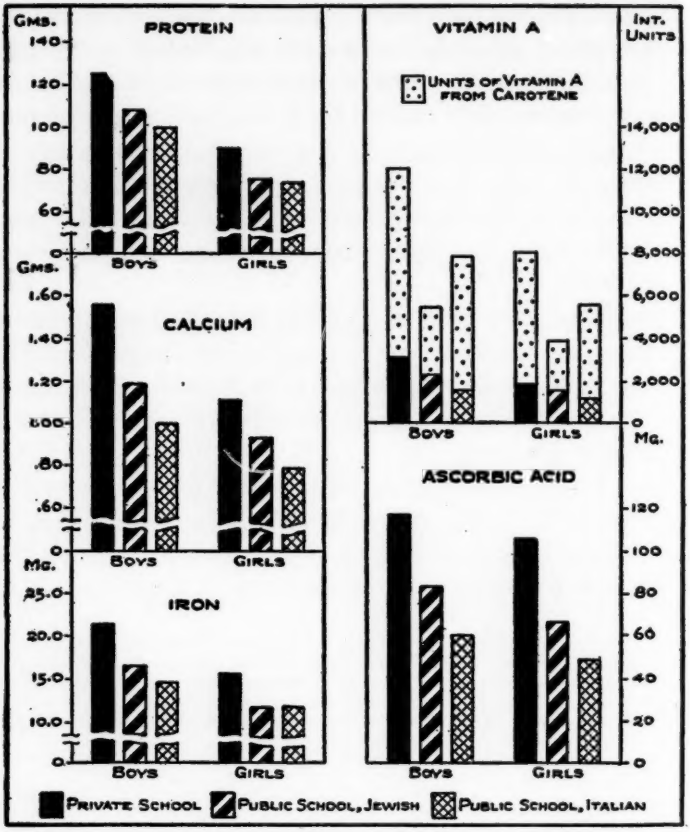

Fig. 3. Average daily amounts of five nutrients estimated for diets of 14-18 year-old boys and girls from three cultural groups.

and boys in the public school are highly significant. But, as a group, Jewish boys had 16.5 mgs. and Italian boys 14.6 mgs. of iron daily compared with 15 mgs. recommended. Diets of both Italian and Jewish girls in the public school furnished, on the average, approximately three-fourths of the 15.6 mgs. of iron supplied by diets of private school girls. Iron intake for Italian and Jewish girls, respec-

tively, was 11.7 and 11.6 mgs. compared with 15 mgs. recommended.

Hemoglobin determinations were available for all pupils, and mean hemoglobin levels for these three cultural groups have been compared (8). The mean hemoglobin levels for boys in the private school and for Jewish and Italian boys in the public school were not significantly different in spite of the difference in iron content of their diets. On the other hand, the mean hemoglobin levels for Italian and Jewish girls in the public school were slightly but significantly lower than the average hemoglobin values for girls in the private school. This suggests the possibility that the average consumption of iron by the public school girls is close to minimum need at these ages and that some who had less than this average intake had a very mild or borderline anemia. There were very few cases of definite anemia.

Calcium. With a mean of 1.56 gms. for boys and 1.11 gms. for girls, private school children had significantly higher intakes of calcium than either group in the public school. The average intake by Jewish boys of 1.19 gms. was 24 per cent less, and of 1.00 gm. by Italian boys 36 per cent less than that of the private school boys. Among girls, the differences were relatively smaller but, on the average, Jewish girls had 16 per cent less and Italian girls 29 per cent less calcium from their diets than private school girls. The relatively high intake of calcium by private school pupils is due undoubtedly in part to a greater consumption of milk, one of the rich sources of the nutrient, and is a reflection of the more favorable economic status of the group. Stiebeling and Phipard (9) have shown that the quantity of milk used varies directly with the amount of money being spent for food.

The daily intake of calcium by Italians was significantly lower than that by Jewish children, averages for both boys and girls being approximately 15 per cent less. Factors in addition to income apparently affected the diets of these public school groups. The more favorable consumption of calcium by the Jewish group may be a

reflection of the importance of "dairy" meals in the dietary of orthodox Jewish families, meals which may include such meat substitutes as milk, cheese, and eggs, all of which are good sources of calcium. The comparatively low intake of calcium by the Italian children is in agreement with data from a study of diets of low-income families in New York City in 1933 (10) which showed that the average amount of milk used by Italian families was somewhat less than amounts used by other families of similar income.

Vitamin A. The vitamin A values in the diets of these pupils were subdivided to show approximate values for intake of the preformed vitamin A and for intake of the provitamin carotene in addition to the total A content of the diet. The vitamin A values derived from milk products, eggs, and other animal foods or from prepared dishes in which these foods were the chief source of vitamin A were included as preformed vitamin A; and values derived from vegetables and fruits or dishes in which these foods supplied the principal estimated value were included as carotene. Such a procedure does not provide an exact subdivision of the vitamin A values. For example, eggs, butter, and other milk products contain carotene as well as preformed vitamin A, but the total vitamin A value has been allocated to preformed vitamin A. Nevertheless, the classification of vitamin A on the basis of types of foods affords an approximate index of the relative importance of vitamin A and carotene in the diets of these cultural groups.

Private school children had a mean daily intake of vitamin A from all foods significantly higher than the averages for Jewish and Italian children. Diets of the Italians furnished from 65 to 70 per cent of, and diets of Jewish children less than half the amount of vitamin A supplied by diets of the private school pupils. The relatively high intake of this nutrient by Italians (7,900 I.U. by boys and 5,600 I.U. by girls) as compared with Jewish boys and girls is in marked contrast to their intake of other nutrients. The average amounts of total vitamin A for Italian boys and girls were more

than 40 per cent above the averages for Jewish boys and girls, and the differences in mean intakes are significant.

The diets of private school pupils of each sex supplied more of both vitamin A and carotene than did the diets of children of the same sex in either public school group. For boys, all the differences were statistically significant. Although the differences in intakes between the private school girls and Italian and Jewish girls were large, they were not all significant. As compared with the Jewish girls in the public school, the private school girls had significantly more carotene but not a significantly larger intake of preformed vitamin A; and as compared with Italian girls, the private school girls had significantly more preformed vitamin A but not significantly larger amounts of carotene.

For the public school group it is evident that food sources of vitamin A in diets of Jewish and Italian children differed. The average intake of vitamin A from animal foods by Italians was 32 per cent less for boys and 25 per cent less for girls than the averages from this source by Jewish boys and girls, but the intake of carotene by Italians exceeded that of Jewish children by more than 90 per cent. About four-fifths of the total vitamin A in the diets of Italians was derived from foods of plant origin, and this reflects their frequent use of broccoli, escarole, and other green vegetables which are rich sources of carotene, as well as their relatively low intake of dairy products. The more favorable intake by Jewish children in the public school of preformed vitamin A is further indication of the relative importance of dairy foods in their diet, as noted previously for calcium. In view of the lower utilization of carotene, which must be converted in the body to vitamin A, the Italian children probably were no better nourished and maybe not as well nourished with respect to vitamin A as the Jewish children in spite of higher vitamin A values.

Ascorbic Acid. For this comparison of cultural groups the ascorbic acid values were recomputed to adjust for losses in cooking and

a few more recent values for raw foods have been used; therefore, amounts of ascorbic acid are somewhat less than those shown in Part I of this report. For many cooked foods the values used were the mid-values from those published by Bryan, *et. al.* (11), and all ascorbic acid values were within the range of values given by these authors.

Diets of the private school pupils, as a group, furnished generous amounts of ascorbic acid, and the averages for boys of 117 mgs. and for girls of 106 mgs. were significantly higher than averages for both cultural groups in the public school. The mean intake daily by Jewish boys of 83 mgs. and by Jewish girls of 66 mgs. were 71 and 62 per cent, respectively, of the intake by the private school boys and girls. Italian children were least well supplied with ascorbic acid; and boys on the average had only 51 per cent and girls 45 per cent of the amount of ascorbic acid furnished by diets of private school boys and girls. Ascorbic acid in the Italian diets was less than three-fourths of that in diets of Jewish children in the public school, and the differences in mean intake for both boys and girls are significant.

It is of interest to note the relative amounts of ascorbic acid from different types of foods in the diets of these three cultural groups. Table 9 shows the average daily intake from and the per cent of total ascorbic acid contributed by six food groups, namely: (1) citrus fruits, (2) tomatoes, (3) other fruits, (4) raw vegetables, (5) cooked vegetables, and (6) all other foods.

The differences in total intake of ascorbic acid by the three cultural groups are due chiefly to differences in their consumption of citrus fruits and cooked vegetables. Among private school pupils, citrus fruits supplied an average intake for boys of 56.6 mgs. and for girls of 60.1 mgs. of ascorbic acid daily, as compared with 37.4 and 28.6 mgs. for Jewish boys and girls, respectively, in the public school and 17.9 mgs. and 14.0 mgs. for Italian boys and girls. Thus, Italian diets furnished approximately half the amount of ascorbic acid

from citrus fruits furnished by Jewish diets. Citrus fruits ranked first as a source of ascorbic acid in the reported diets of both private school and Jewish pupils, supplying from 43 to 56 per cent of the total estimated values in the diets; but among Italians this source was second and furnished about 30 per cent of the estimated total ascorbic acid.

Some vegetables—cabbage, cauliflower, broccoli, and green peppers, for example—contain large amounts of ascorbic acid and estimated amounts of ascorbic acid derived from cooked vegetables were substantial for all groups of children. Cooked vegetables ranked first in importance as a source of ascorbic acid in Italian diets, but the average intake by Italian boys (19.9 mgs.) and by Italian girls (15.1 mgs.) was approximately two-thirds the intake

Table 9. Average amounts of ascorbic acid and percentages of total ascorbic acid furnished by different types of food in the diets of the three cultural groups.

Food Group	Boys			Girls		
	Private School	Public School		Private School	Public School	
		Jewish	Italian		Jewish	Italian
	MILLIGRAMS OF ASCORBIC ACID					
All Foods	117.2	83.3	59.6	106.1	66.4	48.4
Citrus Fruits	56.6	37.4	17.9	60.1	28.6	14.0
Tomatoes	5.6	6.3	4.6	4.9	5.2	3.9
Other Fruits	10.3	11.4	8.2	8.3	10.1	7.8
Raw Vegetables	2.2	3.4	2.7	3.0	3.5	2.4
Cooked Vegetables	31.5	16.3	19.9	22.3	12.4	15.1
All Other Foods	11.0	8.5	6.3	7.5	6.6	5.2
	PER CENT OF TOTAL ASCORBIC ACID					
All Foods	100	100	100	100	100	100
Citrus Fruits	48	45	30	56	43	29
Tomatoes	5	8	8	5	8	8
Other Fruits	9	14	14	8	15	16
Raw Vegetables	2	4	4	3	5	5
Cooked Vegetables	27	19	33	21	19	31
All Other Foods	9	10	11	7	10	11

from this source by private school boys and girls. The Jewish boys and girls had slightly less ascorbic acid from cooked vegetables than the Italians. Cooked vegetables ranked second to citrus fruits as a source of ascorbic acid for private school and Jewish pupils but, with the exception of private school boys, they supplied less than half the amount obtained from citrus fruits.

Tomatoes contain good amounts of ascorbic acid, but the average amounts[6] from this source were small and relatively unimportant in each group, varying from 3.9 to 6.3 mgs. Fruits other than citrus were the third most important source of ascorbic acid. Differences among the cultural groups were small, the average amounts of ascorbic acid ranging from 7.8 to 11.4 mgs.

Differences in consumption levels for ascorbic acid among these three cultural groups are confirmed by marked differences in their plasma ascorbic acid values. In Figure 4, percentage distributions of plasma ascorbic acid values are shown for all pupils in the survey in each cultural group who were examined for plasma ascorbic acid.[7] Among the private school pupils, 3.9 per cent of the boys and 1.8 per cent of the girls had plasma values below 0.40 mg. per cent; and 87.1 per cent of the boys and 90.2 per cent of the girls had plasma values of 0.80 mg. per cent or higher. In contrast to the private school group, 30.4 per cent of the Jewish boys in the public school and 60.5 per cent of the Italian boys had plasma values below 0.40 mg. per cent, and only 39.3 per cent of the Jewish boys and 17.1 per cent of the Italian boys had plasma values of 0.80 mg. per cent or higher. Among the girls, 22.5 per cent of the Jewish group and 36.6 per cent of the Italians had plasma values below 0.40 mg. per cent, and 49.9 per cent of the Jewish group and 30.4 per cent of the Italians had values of 0.80 mg. or higher. Thus, there are very

[6] Many Italians reported tomatoes but most of the tomatoes reported were eaten in sauces and ascorbic acid values were small because of the estimated loss of the nutrient in the long cooking necessary.

[7] Percentage distributions according to plasma ascorbic acid levels shown in Figure 4 are based on the following number of pupils: private school, 178 boys and 164 girls: public school, Jewish, 772 boys and 746 girls; public school, Italian, 205 boys and 112 girls.

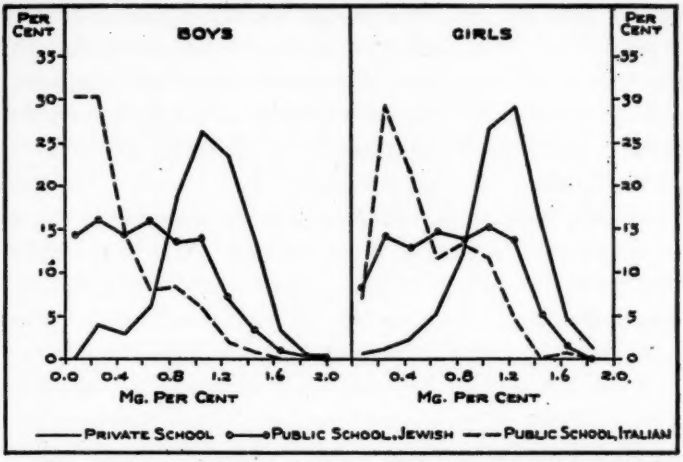

Fig. 4. Percentage distributions of plasma ascorbic acid values for boys and girls in a private high school and for those of two cultural groups, orthodox Jewish and Italian, in a public high school.

striking differences among these three cultural groups in the prevalence of very low plasma levels, and for each sex higher prevalence of low plasma values is associated with lower average intake of ascorbic acid.

Distribution of plasma values by sex for the same cultural group was somewhat more favorable for the girls than for the boys, especially in the Italian group, although the boys had on the average higher intakes of ascorbic acid.

Summary

Diets of high school students in a private and a public school in New York City are analyzed for amounts of protein, iron, calcium, vitamin A, and ascorbic acid.

Averages for intake according to age showed that boys in the private school increased their consumption of protein, iron, and calcium as they became older, but did not increase consumption of vitamin A or ascorbic acid. The increase was fairly proportional

with growth, and intake per kg. did not vary significantly at different ages except for protein for which amounts per kg. decreased significantly with age. Boys in the public school had significantly larger amounts of protein at older ages but not of any other nutrient; and for each of the five nutrients the average daily intake per kg. shows a significant decrease with age.

For girls, variation in consumption levels according to age was not significant for most of these nutrients. Girls in the private school, however, had more iron in their diets at older ages, and those in the public school had less iron and less calcium. Expressed as intake per kg., amounts of protein, iron, and calcium in diets of the public school girls decreased as age increased, but differences in intake per kg. by age among private school girls were not significant for any of these nutrients.

Average dietary values are compared with recommended age-specific allowances per person and per kg. In general, the average intake of pupils in the private school exceeded the allowances. For both boys and girls the intake per kg. of calcium was less than the allowance at ages under 16 years, and girls under 16 years had less iron per kg. than their allowance. Pupils in the public school had lower average amounts of these nutrients than those in the private school and their intake tended to be approximately equal to or to fall below the allowances. Calcium and ascorbic acid were the principal deficiencies for public school boys in relation to allowances, and calcium and iron were the principal deficiencies for public school girls.

Two homogeneous and distinct cultural groups in the public school are compared, namely, a Jewish group and an Italian group and each of these groups is compared with the private school group which was predominantly nonorthodox Jewish. Both for boys and girls, average values for each of the nutrients were significantly higher for the private school group than for the two public school groups. Jewish boys and girls had significantly larger amounts than

the Italians of calcium and ascorbic acid, and boys, but not girls, had significantly larger amounts of protein and iron. The Italian diets furnished about 40 per cent more vitamin A than the Jewish diets. Vitamin A from animal foods was furnished in larger amounts in the Jewish diets than in Italian diets, but the latter supplied nearly twice as much vitamin A from vegetables and fruits as the Jewish diets.

References

1. Kruse, H. D.; Palmer, C. E.; Schmidt, W.; and Wiehl, Dorothy G.: Medical Evaluation of Nutritional Status. I. Methods Used in a Survey of High School Students. The Milbank Memorial Fund *Quarterly*, July, 1940, xviii, No. 3, pp. 257-298.

2. Wiehl, Dorothy G.: Medical Evaluation of Nutritional Status. VII. Diets of High School Students of Low-Income Families in New York City. The Milbank Memorial Fund *Quarterly*, January, 1942, xx, No. 1, pp. 61-76.

3. Wiehl, Dorothy G.: Medical Evaluation of Nutritional Status. XV. Caloric Intake of High School Students in New York City. The Milbank Memorial Fund *Quarterly*, January, 1944, xxii, No. 1, pp. 5-40.

4. Recommended Dietary Allowances. National Research Council, Reprint and Circular Series No. 115, Washington, D. C., January, 1943.

5. Roberts, Lydia J.: Nutrition Work With Children. Revised Edition, Chicago, The University of Chicago Press, 1935, pp. 381-382.

6. Fisher, R. A.: Statistical Methods for Research Workers. Eighth Edition, Edinburgh, Oliver and Boyd, 1941, pp. 204-220.

7. Inadequate Diets and Nutritional Deficiencies in the United States: Their Prevalence and Significance. National Research Council, Bulletin No. 109, Washington, D. C., November, 1943.

8. Wiehl, Dorothy G.: Selecting Cases of Anemia Among Adolescents. *American Journal of Public Health*, October, 1941, 31, No. 10, pp. 1073-1078.

9. Stiebeling, Hazel K. and Phipard, Esther F.: Diets of Families of Employed Wage Earners and Clerical Workers in Cities. United States Department of Agriculture, Circular No. 507, Washington, D. C., U. S. Government Printing Office, 1939, 140 pp.

10. Wiehl, Dorothy G.: Diets of Low-Income Families in New York City. The Milbank Memorial Fund *Quarterly Bulletin*, October, 1933, xi, No. 4, pp. 308-324.

11. Bryan, A. H.; Turner, D. F.; Lotwin, G.; and Huenemann, R. L.: The Estimation of Ascorbic Acid Content of the Diet. *Journal of the American Dietetic Association*, 1940, 16, pp. 891-897.

SOCIAL AND PSYCHOLOGICAL FACTORS AFFECTING FERTILITY

IV. DEVELOPING THE SCHEDULES, AND CHOOSING THE TYPE OF COUPLES AND THE AREA TO BE STUDIED[1]

P. K. WHELPTON AND CLYDE V. KISER

ALTHOUGH the industrial revolution was followed by a phenomenal wave of population growth in countries of western civilization, it also contained the seeds of eventual population decline. In retrospect, it is clear that the wave of growth was due simply to the earlier and more rapid impact of modernization on mortality than on fertility. The increased food supply and even elementary improvements in sanitation appear to have brought almost immediate declines in mortality and these declines were accelerated with medical advances and conquest of the plagues. Declines in birth rates came later, and for a time more slowly. It is to this lagging decline of birth rates that the era of high natural increase and the consequent wave of population growth were due. As passing decades brought increasing urbanization, higher standards of living, and more education, birth rates declined much more rapidly than death rates and the previously wide margin of natural increase began to diminish. The stage of this process varies by area, but in most of the countries of northern and western Europe reproduction rates are now well below the requirements for continued population replacement and the existing increases are due only to a currently favorable age distribution. In our own country the present age-specific fertility levels barely meet permanent replace-

[1] This is the fourth of a series of reports on a study conducted by the Committee on Social and Psychological Factors Affecting Fertility, sponsored by the Milbank Memorial Fund with grants from the Carnegie Corporation of New York. The Committee consists of Lowell J. Reed, Chairman; Daniel Katz; E. Lowell Kelly; Clyde V. Kiser; Frank Lorimer; Frank W. Notestein; Frederick Osborn; S. A. Switzer; Warren S. Thompson; and P. K. Whelpton.

The three reports that have been published in previous issues of the *Quarterly* related primarily to the Household Survey, conducted in order to locate the couples to be included in the intensive Study. The present report is the first of several relating to the Study proper.

ment requirements and the outlook is for cessation of population growth between 1970 and 2000.

The long-standing decline in the birth rate in western countries is frequently explained in a general way as due to a network of changes in human values and modes of life inherent in the transition from rural and agricultural to urban and industrial economies. But this decline in number of children per family, representing a revolutionary change in one of the basic conditions of life, has been studied in most cases only from materials collected for other purposes. True, a marked advance in knowledge was made when recent studies of contraception served finally to undermine the thesis, still held by some biologists, that the innate reproductive power of individuals had been undercut in major degree by the sedentary life in cities and by the tempo of modern living. These studies provide strong basis for the inference that the declining fertility has been chiefly voluntary, implemented by contraception. Nevertheless, very little has been done heretofore by way of a scientific study of the individual motivations regarding size of family.

In the hope of at least making a beginning in this field the present Study of Social and Psychological Factors Affecting Fertility was organized. The primary purpose of the Study may be summarized as follows: to ascertain (a) the extent to which the actual number of children that couples have is larger or smaller than the number they want; (b) how couples are influenced by various socio-economic and psychological factors in deciding upon the number of children they want; and (c) how the size of families would be affected by various measures which might be included in a national population program aimed at checking the decline in the birth rate and improving the quality of the population. The Study had its origins in informal discussions of a group of demographers, namely, Clyde V. Kiser, Frank Lorimer, Frank W. Notestein, Frederick Osborn, Warren S. Thompson, and P. K. Whelpton. In December 1938, a request for funds to finance exploratory work was submitted

to the Carnegie Corporation, which made a grant to the Milbank Memorial Fund as sponsor of the Study. As plans and possibilities were explored, it became evident that the psychological and statistical aspects of such research would be highly important, and that it would be desirable to have these fields represented more adequately in the group. As a result, the Committee finally organized to conduct the Study included Lowell J. Reed (Chairman), Daniel Katz, E. Lowell Kelly, S. A. Switzer, and the demographers mentioned above.

When the Study was being organized (1938-1940) little exact information was available regarding the extent or effectiveness of contraceptive practices among married couples in the United States as a whole. Several valuable studies had been made of selected groups, for example, of wives who were above average in fertility, or who had attended birth control clinics,[3] but none had dealt with a large cross-section of couples unselected with direct reference to either fertility or an interest in contraception. In such a sample it was important to ascertain for couples with children the number of conceptions that (a) were planned, i.e., contraceptive practices were discontinued because pregnancy was desired; (b) occurred when contraceptive practices were discontinued because of other reasons; (c) occurred in spite of attempts at prevention; and (d) occurred if contraception never was practiced. For childless couples the need was to distinguish between those who were childless from choice and those who were physiologically unable to have a child, and to ascertain from the latter the reasons for their sterility. Knowledge regarding these matters is essential for judging the changes in size of family that may come about through the more effective practice

[3] For example, *see:*

Kopp, Marie E.: Birth Control in Practice. New York, Robert M. McBride and Company, 1934, 290 pp.

Pearl, Raymond: The Natural History of Population. New York, The Oxford University Press, 1939, 416 pp.

Stix, Regine K. and Notestein, Frank W.: Controlled Fertility. Baltimore, The Williams and Wilkins Company, 1940, 201 pp.

of contraception and through better diagnosis and treatment of sterility and low fecundity.

Information about the reasons why couples want one, two, or some other number of children was even less adequate than that regarding the above topics; in fact, except for a recent study of Army aviators,[8] it was almost nonexistent. Various studies had shown conclusively the presence of important differentials in fertility when the population was grouped according to rural and urban residence, occupation, income, education, and other characteristics. The problem was to analyze the factors causing these group differences from the standpoint of their effect on particular couples. To what extent, for example, is the number of children that a couple wants determined by their financial history and aspirations, their social outlook, their family background, their liking for children, their health and marital adjustment, their interest in religion, their feeling of personal adequacy, their need for ego satisfaction, and other socio-economic and psychological characteristics? How would these influences be modified by certain proposals which might be included in a program designed to check the decline in birth rates and size of family? Among the proposals already suggested or adopted here or in Europe had been (1) relieving parents of more of the cost of raising children, especially the cost of medical and dental care, and higher education; (2) providing adequate housing for families with several children at rentals within their means; (3) opening nursery schools so as to reduce the extent to which children interfere with their mother's freedom; and (4) paying a so-called "mother's wage," based on the number of children. Would any of them prove practical and effective?

Answers to these questions were wanted not merely to satisfy scientific curiosity, but because of their practical utility. Public

[8] Flanagan, John C.: A Study of Factors Determining Family Size in a Selected Professional Group. *Genetic Psychology Monographs*, 1942, XXV, pp. 3-99.

concern regarding population matters in this country had been steadily and rapidly increasing, in part because of the attempts to develop national population programs in various European countries before World War II, and because of the publicity which had been given to the slowing up of our population growth and the decline in our birth rate. It was expected that this concern would be stimulated in the future by the spreading realization that 1938-1940 birth rates by age of mother would not quite maintain a stationary population in the long run, and that a decline in these rates in the twenty years after 1938-1940 as great as that in the twenty preceding years would bring about a rapidly decreasing population before the end of the present century.[4]

Once an important portion of the public is aroused over population matters, there is sure to be a powerful demand that something be done about them on a nation-wide scale. When the Study was being planned, two lines of attack already had been suggested. In the first place, it was becoming recognized that various measures which had been adopted or were being advocated in housing, health, taxation, and other fields, while not aimed at influencing the size or quality of our population, would nevertheless affect them significantly and in some cases harmfully. The feeling was growing that the programs in such fields should be oriented to the population needs of the Nation. Secondly, it was beginning to be realized that progress in improving the population situation would be slow by this indirect attack alone; hence, that measures aimed directly at bringing about certain changes in the number and quality of our people should be developed and put into effect. Even then there

[4] The net reproduction rate of the white population averaged slightly under 100 during 1938-1940. The gross reproduction rate of the white population was 147 in 1918-1920 (according to estimates of the Scripps Foundation for Research in Population Problems) and 107 in 1938-1940; it declined over 27 per cent. At this rate it would be 78 in 1958-1960, and the net reproduction rate about 72.

The much higher crude birth rates of 1941-1944 than of 1938-1940 should not be interpreted as reversing the long-time downward trend, for they result in large measure from births postponed because of the depression, and births (especially first births) moved ahead because of the war. Whelpton, P. K.: Effect of Increased Birth Rate on Future Population. *The American Journal of Public Health*, April, 1945, xxxv, No. 4, pp. 326-333.

were groups urging the establishment of some sort of national population commission to develop such a program. Much stronger support for such a commission is to be expected in the future.

If a sound and comprehensive population policy is to be developed by a commission or by other means, it is essential to know more about the optimum rate of growth and size of the population and the hereditary background and environmental surroundings that make for optimum quality in the population. In addition, if couples are to be encouraged to have families of the size which is desirable for them and for society as a whole, both quantitatively and qualitatively, it is essential to know the relative importance of the socio-economic and psychological factors that have influenced them in deciding on the number of children they want, and the changes in these factors which would lead to a different decision as to size of family. Although it was realized that more research was needed regarding the quantity and quality of the population, it was believed that there was a greater immediate need for research regarding the motivations back of the fertility pattern. The Study deals with the latter problem. It should not be expected, of course, to furnish all the information which should be available on these matters. The Committee hopes, however, that the Study will prove worth while not only with respect to factual data for a large group in a representative area, but also with respect to its contribution to methodology in a new field of study.

The present report relates to questions of procedure that faced the Committee and Staff in planning and conducting the Study. For example, what questions should be asked? What type of couples should be included? In what area should the Study be conducted? How should specific couples be located and how could their cooperation be secured?

Developing the Schedules and Interviewing Procedure

From the outset the Committee realized that its problem lay in

a new field in which the instruments of research themselves would have to be evolved. It is therefore not surprising that the development of the schedules and the interviewing procedure was by far the most important phase of the preparation for the Study. As a first step, Dr. Warren S. Thompson prepared a list of socio-economic and psychological factors affecting the size of planned families, the hypotheses to be tested in the Study. Under each hypothesis he suggested a number of questions designed to obtain information bearing on that hypothesis. His suggestions and those of other Committee members were discussed at a series of meetings. The hypotheses and questions which seemed least helpful were dropped; the others were developed into a schedule which was tested on a small scale. Some questions were found to be undifferentiating, some to be misinterpreted, and some to be too difficult for the respondent to answer. A discussion of the findings led to the rewording of some questions and the elimination of others. Usually, however, the latter were heavily outnumbered by questions which had occurred to Committee members or had been suggested by others since the previous meeting, and which appeared to merit a test. A revised schedule was then prepared, tested on a small scale, and changed again in accordance with the experience thus gained, the process being repeated several times.

By the spring of 1939 it was believed that the schedules were in shape for tests on a somewhat larger scale. One set of schedules was tested in Hamilton, Ohio, by Mrs. Martha Sampson Herrick under the direction of Dr. Warren S. Thompson, and a somewhat different set in New Brunswick, New Jersey, under the direction of Dr. Frank W. Notestein and Dr. Daniel Katz. The material collected was worked over by Miss Mildred Parten. On the basis of this experience a revised set of schedules was tested on a still larger scale in the summer of 1940 by Mrs. Herrick in Hamilton, and by Mrs. Emily Marks Skolnick in Trenton, New Jersey. The analysis of these data led to the final revision of the schedules.

In the course of schedule testing it became evident that the amount of information desired was too great to be obtained at a single interview. Several alternative plans were considered and tested: (a) two interviews on different days; (b) two interviews plus a questionnaire to be filled out during the interim; and (c) three interviews, the second consisting chiefly of a questionnaire to be filled out with the interviewer present to explain any items not clear. As experience was gained regarding the feasibility of interviewing wives, a second modification was suggested, namely, the securing of certain information from husbands as well as wives. It was realized that in many families the number of children born reflects the ideas of the husband on family size more closely than those of the wife. In such cases an analysis of the relation between the actual and the desired number would show much less agreement if based on the wife's attitudes alone than on hers and her husband's together. Subsequent tests indicated that the most successful plan was (1) a short interview with the wife, using a schedule (Form A) containing questions designed primarily to enlist her interest and cooperation in the Study, to secure some simple demographic information about the family, and to ascertain how the couple should be classed as to fecundity, i.e., the physiological ability to have children; (2) an interview with the wife and husband together at which each of them independently checked categories on a questionnaire (Forms B or B2 for the wife and C or C2 for the husband) dealing primarily with attitudes,[5] and answered orally certain questions (on Form D) relating to education, employment, economic status and family background; and (3) a third interview with the wife dealing primarily with a history of pregnancies and contraceptive practices (Form E).

The hypotheses which it was hoped could be partially or wholly proved or disproved, and the number (approximate) of questions

[5] To encourage frankness, the interviewer always emphasized at the outset that the husband would not see the wife's schedule nor the wife the husband's.

bearing on each hypothesis (but scattered throughout the final schedules) are as follows:

1. The greater the difference between the actual level of living and the standard of living desired, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Nineteen questions.

2. The greater the feeling of economic insecurity, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Twelve questions.

3. The higher the socio-economic status, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Fifty-five questions.

4. The greater the extent of doubling-up within families, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Ten questions.

5. The stronger the interest in, and liking for, children, the lower the proportion of couples practicing contraception effectively and the larger the planned families. Twenty-four questions.

6. The interest of children in, and their desire for, brothers and sisters affects the size of the family. Four questions.

7. The stronger the feeling that children interfere with personal freedom, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Twenty-three questions.

8. The belief that an only child is handicapped is an important reason for having a second child. Four questions.

9. The desire to insure against childlessness is an important reason for having a second child. Four questions.

10. Preferences regarding the sex of children affect the size of the family. Eleven questions.

11. The number, size, and location of communities in which couples have lived affects the proportion practicing contraception effectively and the size of planned families. Twenty questions.

12. Family and childhood situations and attitudes affect the propor-

tion of couples practicing contraception effectively and the size of the planned families. Sixty-six questions.

13. Conformity to group patterns affects the proportion of couples practicing contraception effectively and the size of the planned families. Sixteen questions.

14. The greater the adherence to traditions, the lower the proportion of families practicing contraception effectively and the larger the planned families. Twenty-eight questions.

15. The greater the interest in religion, the lower the proportion of couples practicing contraception effectively and the larger the planned families. Twenty-eight questions.

16. The stronger the feeling of personal inadequacy, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Thirty-five questions.

17. The greater the tendency to plan in general, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Eighteen questions.

18. The greater the extent to which interest in children is a matter of personal satisfaction, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Sixteen questions.

19. That member of the couple who is dominant in general family matters tends also to be dominant in determining whether conception shall be controlled and the size of the planned family. Twenty-six questions.

20. The more satisfactory the marital adjustment, the higher the proportion of couples practicing contraception effectively and the larger the planned families. Thirty-two questions.

21. The poorer the health of husband and/or wife, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Sixteen questions.

22. The poorer the health of the children, the higher the proportion of couples practicing contraception effectively and the smaller the planned families. Six questions.

23. The greater the fear of pregnancy, the higher the proportion of

couples practicing contraception effectively and the smaller the planned families. Ten questions.

In addition to the questions* assigned to a hypothesis there were others relating to the following topics:

1. Attitudes toward hypothetical inducements to have more children. Sixteen questions.

2. Demographic information about the couple and each child. Twenty-seven questions.

3. Contraceptive practices, menstruation, and lactation. Twenty-three questions (many of them repeated for each practice and for each interpregnancy interval).

To supplement the information obtained by questioning the wife and husband, the interviewer herself recorded certain facts and opinions. While the wife and husband were checking categories on the questionnaires the interviewer checked the items on Chapin's Social Status Scale. Soon after the last schedule (Form E) was completed for each couple, she rated the husband and wife with respect to ten of the hypotheses and three other items. Finally she wrote a short analytical summary of the case.

According to the early concepts, the Study was to deal with fecund couples; hence the interviews with those who were found to have had important periods of sterility were to be discontinued as soon as such a situation was discovered. Merely to ascertain the

*In the preceding and following lists a question asked separately about husband and wife is counted twice. Questions applying to each child or to each sib are counted once. Few if any wives and husbands were asked all the questions. For example, if a wife replied "None" to the questions "How many years did you work before marriage?" and "How many have you worked since marriage?" she was not asked the questions regarding dates of employment, occupation, industry, hours per week, earnings, and reasons for working and quitting. Similarly, if the husband's answer to the question "Have your earnings been cut off by sickness or unemployment for several months since marriage?" was "No" he was not asked the questions regarding dates of such periods, the reasons for them, nor how family expenses were met. On the other hand, if there was more than one period of employment for the wife or unemployment for the husband these questions were asked for each period.

It should be emphasized, however, that these counts of questions refer only to those printed on the schedules. To obtain an accurate answer to one such question it may have been necessary for an interviewer to ask several others.

proportion of these couples in a group of the type to be studied would be a marked step forward. Several physicians had stated their opinion as to the prevalence of sterility,[7] but there was little statistical information for typical groups of the population. As successive drafts of schedules were tested, however, it became obvious that a considerable amount of additional information could be secured from sterile couples at a small additional cost. Because so little was known about the characteristics of such couples and their attitudes toward sterility it was decided to expand this phase of the Study. A special schedule (Form S) was prepared, containing questions to be asked the wife at the first interview (as soon as Form A was completed), though in some cases a second call might be required. It was designed to secure (a) the same information as for fecund couples on parents, siblings, education, pregnancies, and contraceptive practices; (b) abridged information on socio-economic status and employment history; and (c) special information on duration and causes of sterility. It was realized that adequate facts on the last-mentioned topics could not be obtained from wives by interviewers without medical training but it was hoped that something worth while might be learned.

A fundamental question raised at an early stage of the planning was whether a representative group of women, such as was wanted for the Study, would be willing to answer the essential questions of a highly personal nature. To lessen the likelihood of a refusal, considerable attention was given to means of arousing the wife's interest at the beginning of the interview. The first method adopted was the obvious one of going from the general to the specific—from questions about the ideal size of a family and attitudes toward childless families to questions about the wife's liking for children and her contraceptive practices. A second device was the inclusion

[7] For examples, *see* Reynolds, Edward and Macomber, Donald: FERTILITY AND STERILITY IN HUMAN MARRIAGES. Philadelphia, W. B. Saunders Company, 1924.

Lane-Roberts, Cedric: STERILITY AND IMPAIRED FERTILITY: PATHOGENESIS, DIAGNOSIS, AND TREATMENT. New York, Paul B. Hoeber, Inc., 1939.

in Form A (the first schedule) of stories about hypothetical couples. The socio-economic and demographic characteristics of certain couples and their attitudes towards various matters were described by the interviewer, who then asked whether the couple should be advised to have a (another) child and why. This approach proved to be exceedingly helpful in interesting wives and securing their cooperation. A third device, giving the wife something for her time and trouble, also was found helpful in many cases. Moreover, it proved beneficial to the interviewer's morale, an advantage not anticipated at the outset. Knowing that the wife was to receive some money for cooperating, the interviewer felt less hesitant about asking so many questions.

In spite of the foregoing attempts to secure cooperation, the proportion of couples in the 1940 field trials who refused to cooperate (approximately 33 per cent in Hamilton and 18 per cent in Trenton) was sufficiently high to be disturbing.[8] In both cities the husband and wife were offered fifty cents each for cooperating. It was thought that raising this to $1.00—putting it on the basis of paper money instead of change—might lower the refusal rate somewhat. A more promising suggestion was believed to be the securing of local sponsorship for the Study. In Hamilton and Trenton the interviewers introduced themselves, and had as their only credential a letter from a Committee member. It was hoped that a significantly higher proportion of couples would cooperate if they could be shown that the Study had the approval and support of local people whose opinions carry weight.[9]

Although the large number of refusals in the trial surveys was

[8] The lower proportion in Trenton was due in important degree to a difference in interviewing procedure. In Hamilton, if a wife said at the end of the first interview that she would cooperate but she was positive her husband would not, the interviewer's instructions were to make no attempt to see the husband. In Trenton, however, the interviewer was instructed to try to see the husband, explain the Study to him, and secure his cooperation. She accomplished the latter in about half of the cases of this type.

[9] That these changes in procedure were worth while is borne out by the experience in Indianapolis, to be discussed in the next article.

discouraging, the amount of interest shown by the cooperating couples was highly gratifying. A large majority of the husbands and wives seemed to be genuinely interested in the questions and to enjoy answering them. Many wives in particular were glad to have a chance to discuss family planning and contraceptive practices with an intelligent person. Apparently they had thought these matters were not proper subjects for conversation according to the *mores* of their group, hence had not discussed them at all, or had done so with a feeling of guilt. To have them presented naturally as topics for decent discussion was pleasing. Typical of a less frequent, but not uncommon, reaction was the comment "It's about time that someone paid attention to the difficulties faced by ordinary people in raising a family, and that something be done to make it easier for them."

Calls made to secure supplementary information from some Hamilton couples a few weeks after their schedules presumably were completed showed the excellent *rapport* usually established. In most cases the interviewer was greeted as an old friend. At one home an unexpected influence of the Study came to light. Although there were two children in this family the husband and wife had never talked about the number of children they desired. During recent years, the wife had come to think that the husband did not want a third child, hence that they would not have another even though she herself wanted it. The husband, on his part, had formed a similar opinion. As a result of being interviewed, however, the couple talked over some of the questions that had been asked, and discovered that each was mistaken as to the other's attitude. When last seen they were planning to have a third child.

The Type of Couples to Be Studied

The expense of an intensive study of the type described above imposes sharp limits on the number of couples that can be included. It was highly desirable, therefore, to restrict the expensive

interviews to a group sufficiently homogeneous that in the final analyses of socio-economic and psychological factors affecting fertility it would not be necessary to subdivide the couples by such factors as color, nativity, religion, type of community of residence since marriage, duration of marriage, and age. With a limited number of couples such subdivisions could easily result in groups too small to yield valid results.

In order to avoid subdividing by the foregoing factors, it was necessary to decide on the type of couples to be included in the Study. In so far as color and nativity were concerned the answer was obvious. Many studies had shown that native-white, foreign-born white, and Negro women differ with respect to fertility. Since this initial Study could not be conducted on a sufficiently large scale to secure an adequate sample of each group, it seemed desirable to concentrate on the largest group, the native white.

A corresponding situation prompted restriction to Protestant couples.[20] In this instance, however, there was an additional factor, namely, the possibility that too many Catholic couples would not discuss frankly their experiences with contraception.

Since size of family[21] for most fecund couples is subject to change until the wife reaches age 45 or thereabouts, it is obvious that there are certain advantages in limiting a study of the factors influencing the number of live births to couples in which the wife is 45 or older. An important disadvantage, however, is the remoteness of the most decisive period. Birth statistics for recent prewar years show that more than three-fourths of the first births to native-white women occurred before age 27, more than three-fourths of the third births before age 32, and over three-fourths of the fifth births before age 35.[22] In other words, the reasons leading to the last live birth to

[20] A few persons reporting "no religious preference" were included but nearly all of them were of Protestant background.

[21] Size of family, or parity, as used in this article is based on number of live births.

[22] U. S. Bureau of the Census: Vital Statistics of the United States, 1938. Part I. Washington, U. S. Government Printing Office, 1940, pp. 116-117.

women aged 45-49 in 1941 were based on conditions of 1907-1922 for about three-fourths of those with one live birth, conditions of 1910-1927 for about three-fourths of those with three live births, and conditions of 1913-1930 for about three-fourths of those with five live births. Such remoteness would not be so important if birth rates had been relatively stationary since these periods. But between 1920 and 1940 rates for third births to native-white women aged 15-49 fell by over 30 per cent and rates for fifth births by nearly 50 per cent.[18]

Other advantages of studying younger couples arise from the fact that most of them are still facing the problem of whether to have another child—the problem is current rather than historical. Unless they are sterile or simply letting nature take its course, they are still practicing contraception or are trying to have another pregnancy. And because they believe that conception can occur their attitude toward it should be realistic, and relatively devoid of the wishful thinking indulged in by some couples when they realize that having another baby is physiologically impossible.

On the other hand, to select women who are too young would be as objectionable as selecting the too old. For example, barely 10 per cent of the native-white girls aged 15-19 in 1940 had married, and only a corresponding proportion of the women 25-29 had been married ten years. To study wives in the 25-29 age group as a whole would mean including a high proportion of women married less than ten years, which is a rather short period of married life to use as a base in judging the conditions determining family size. To select from the wives in the 25-29 age group those who had been married ten years or longer would introduce all the biases connected with early marriage.

The final decision was to restrict the Study to couples who were married in 1927, 1928, or 1929, and in which the wife was under

[18] From unpublished estimates of the Scripps Foundation for Research in Population Problems, made for a current study financed by a grant from the Rockefeller Foundation.

30 and the husband under 40 at marriage. Since the field work was carried on from April 1, 1941 to January 31, 1942, these marriage dates mean that all the marriages not broken by death or divorce had lasted eleven to fifteen years with a large majority between twelve and fourteen years. The restrictions on age at marriage mean that all the wives were between 27 and 44 when interviewed and, because of the high proportion of first marriages occurring at ages 18-23, that a majority of them were between 30 and 38. For husbands the total range in age was from 29 to 54, the majority being 32-40.

Since the Study could not be on a sufficiently large scale to include a representative group of couples with husband and/or wife married more than once, it seemed best to eliminate the effect of broken marriages and confine the Study to couples married once only.

For reasons explained above it was desirable to concentrate the Study on couples who had at least tried to plan size of family to some extent. A strong inverse relation between education and size of family had been brought out in previous studies. Because it was believed that this was due in large measure to a relation between education and attempts to plan size of family, a fairly effective means of raising the proportion of planners among couples interviewed was to exclude wives and husbands who had not completed at least the 8th grade. An additional reason for excluding such couples became evident while the schedules were being developed and tested. Experience showed that many persons with less schooling had too much difficulty in answering the questions, especially the 175 questions on Forms B and C[34] which called for the checking of the appropriate category by the respondent.[35]

At an early stage of planning it was hoped that couples meeting

[34] Forms B and C were checked by wives and husbands who had children; Forms B2 and C2 by those without children. The latter contained about 150 questions.

[35] After two husbands had completed Form B it was discovered that their wives were incorrect in reporting on Form A that they had finished the 8th grade. In view of the progress already made in the interviewing the schedules for these couples were completed.

the above requirements could be studied in both urban and rural areas in order to throw light on the motivating factors which were believed to be responsible for an important part of the differences between urban and rural birth rates. As successive drafts of the schedules were tested, however, it became evident that the Study would be more expensive than had been anticipated, and that the funds available would not permit completing an adequate number of schedules in more than one type of area. In selecting the type, the majority of considerations favored a fairly large city. Most important was the fact that the decline in the United States birth rate, which dates back at least to 1800, apparently began in the cities of those times, and resulted in a long-standing inverse relation between birth rates and size of community when allowance is made for differences in race, nativity, sex, and age. In other words, the specific birth rates of the large cities at a given time have indicated what the national birth rates probably would be a few decades later. A second reason stems from the first. The information available indicates that the lower specific birth rates of large cities than of smaller communities are due chiefly to the more widespread and effective use of contraceptives, and hence that cities contain a higher proportion of families planned as to size. Since the Study was directed primarily at such families, it could be conducted most efficiently in a large city.

Because of the variations in fertility by size of community, the question arose as to whether all married couples residing in the selected city and meeting the requirements discussed above should be included, or whether those who had moved in from smaller places in recent years should be ruled out. There is little direct information on the extent to which married couples who have migrated to large cities from smaller places take their fertility pattern with them. In view of the relationship just mentioned, however, it seemed reasonable to assume that the number of live births to couples currently residing in a large city would tend to

30 and the husband under 40 at marriage. Since the field work was carried on from April 1, 1941 to January 31, 1942, these marriage dates mean that all the marriages not broken by death or divorce had lasted eleven to fifteen years with a large majority between twelve and fourteen years. The restrictions on age at marriage mean that all the wives were between 27 and 44 when interviewed and, because of the high proportion of first marriages occurring at ages 18-23, that a majority of them were between 30 and 38. For husbands the total range in age was from 29 to 54, the majority being 32-40.

Since the Study could not be on a sufficiently large scale to include a representative group of couples with husband and/or wife married more than once, it seemed best to eliminate the effect of broken marriages and confine the Study to couples married once only.

For reasons explained above it was desirable to concentrate the Study on couples who had at least tried to plan size of family to some extent. A strong inverse relation between education and size of family had been brought out in previous studies. Because it was believed that this was due in large measure to a relation between education and attempts to plan size of family, a fairly effective means of raising the proportion of planners among couples interviewed was to exclude wives and husbands who had not completed at least the 8th grade. An additional reason for excluding such couples became evident while the schedules were being developed and tested. Experience showed that many persons with less schooling had too much difficulty in answering the questions, especially the 175 questions on Forms B and C[34] which called for the checking of the appropriate category by the respondent.[35]

At an early stage of planning it was hoped that couples meeting

[34] Forms B and C were checked by wives and husbands who had children; Forms B2 and C2 by those without children. The latter contained about 150 questions.

[35] After two husbands had completed Form B it was discovered that their wives were incorrect in reporting on Form A that they had finished the 8th grade. In view of the progress already made in the interviewing the schedules for these couples were completed.

the above requirements could be studied in both urban and rural areas in order to throw light on the motivating factors which were believed to be responsible for an important part of the differences between urban and rural birth rates. As successive drafts of the schedules were tested, however, it became evident that the Study would be more expensive than had been anticipated, and that the funds available would not permit completing an adequate number of schedules in more than one type of area. In selecting the type, the majority of considerations favored a fairly large city. Most important was the fact that the decline in the United States birth rate, which dates back at least to 1800, apparently began in the cities of those times, and resulted in a long-standing inverse relation between birth rates and size of community when allowance is made for differences in race, nativity, sex, and age. In other words, the specific birth rates of the large cities at a given time have indicated what the national birth rates probably would be a few decades later. A second reason stems from the first. The information available indicates that the lower specific birth rates of large cities than of smaller communities are due chiefly to the more widespread and effective use of contraceptives, and hence that cities contain a higher proportion of families planned as to size. Since the Study was directed primarily at such families, it could be conducted most efficiently in a large city.

Because of the variations in fertility by size of community, the question arose as to whether all married couples residing in the selected city and meeting the requirements discussed above should be included, or whether those who had moved in from smaller places in recent years should be ruled out. There is little direct information on the extent to which married couples who have migrated to large cities from smaller places take their fertility pattern with them. In view of the relationship just mentioned, however, it seemed reasonable to assume that the number of live births to couples currently residing in a large city would tend to

be larger for couples who had lived in small places or in the country most of the time since marriage than for those who had lived in large cities all of the time since marriage.[26] To make certain that the influence of such migrants was not important, eight years of residence since marriage in a city of 25,000 or over was finally chosen as a minimum requirement. Since the year of marriage restriction required eleven to fifteen years of married life, the residence restriction required that at least 53 to 72 per cent of the years since marriage be spent in cities of 25,000 or over.

In summary, the decision was made that eligibility for study would be restricted to couples with the following characteristics: husband and wife native white; both Protestant; married in 1927, 1928, or 1929; wife under 30 and the husband under 40 at marriage; neither previously married; residents of a large city most of the time since marriage; and both elementary school graduates.

The choice of the particular city to be studied was influenced greatly by the eligibility requirements outlined above. Preliminary tests indicated that a city of less than 300,000 population probably would not contain the desired number of eligible couples. Among such cities the ease of locating eligible couples would vary primarily with the proportion of the population which was native white and Protestant. According to the 1930 Census the proportion of native-white persons in cities of 250,000 or more in 1930 was highest for Indianapolis (84.1 per cent), followed closely by Denver, Toledo, Kansas City (Missouri), Columbus (Ohio), Akron, Portland (Oregon), St. Paul, Louisville, Cincinnati, Minneapolis, and Dallas (each above 80 per cent).[27] A combination of this information with that from the 1926 Census of Religious Bodies indicated that the

[26] The place of residence of individuals before marriage may have little influence on the fertility of couples residing in cities exclusively after marriage. One study, though based upon small samples, has suggested that among couples residing in cities since marriage there is little difference between the fertility rates of those born in cities and those born in smaller places. *See* Kiser, Clyde V.: Birth Rates Among Rural Migrants in Cities. The Milbank Memorial Fund *Quarterly*, October, 1938, xvi, No. 4, pp. 369-381.

[27] Some information, but not the foregoing percentages, had been released from the 1940 Census at the time when it was necessary to select the city to be studied.

proportion of the population which was native white and belonged to a Protestant Church was highest in Dallas (60-65 per cent), second in Indianapolis (53-58 per cent), and lower (40-50 per cent) in Kansas City, Columbus, Minneapolis, Portland, Akron, Louisville, and Denver. Although Indianapolis did not head the latter list it had certain advantages over Dallas, as well as the other cities mentioned. Its economy appeared most normal, for the proportion of workers in manufacture, transportation, trade, professional services, and other types of industries resembled most closely that of the urban portion of the Nation. In addition, Indianapolis is an older city than Dallas and is located nearer the center of the Nation's population. It is perhaps as "typically American" as any city of comparable size.

Locating Eligible Couples

How to locate the couples meeting the eligibility requirements of the Study was another problem requiring considerable attention during the planning stage. The ideal method from the standpoint of the Study would have been to secure from the 1940 Census the addresses of couples meeting the requirements for race, nativity, age, education, and (for those in the Census sample) previous marriage of wife, and to interview them to ascertain which met the remaining requirements. Since Census data for individuals and couples must be kept confidential, this approach was out of the question. The first plan tested called for (a) listing from the marriage records the couples married for the first time in 1927, 1928, or 1929, the ceremony performed by a Protestant clergyman or a public official, the husband and wife native white, and the husband under 40 and the wife under 30 at marriage; (b) looking through the latest city directory for the addresses of the husbands; and (c) ascertaining by interviews which of those who were listed met the remaining requirements. The chief disadvantage was the automatic exclusion of couples who met all the requirements but (a) who had

married in the City but no longer resided there, or (b) who resided there but were married elsewhere. Although some of the eligibility restrictions were adopted primarily to increase the homogeneity of the couples to be studied (as explained above), it was realized that a line had to be drawn somewhere. The final decision of the Committee was that an important number of couples probably moved between large cities, and that such couples should not be omitted from the Study.

The second plan tested called for a house-to-house survey of the City, using a short schedule consisting primarily of questions necessary to determine eligibility. Obviously, it met most of the objection to Plan 1 just discussed. Although a test of Plan 2 indicated that the cost would be substantially larger than that of steps (a) and (b) of Plan 1, it was believed that much of the excess would be offset by a saving of the interviewers' time. An important proportion of the couples visited by the interviewers in step (c) of Plan 1 would be found ineligible because of insufficient education, the marriage broken by divorce or death of wife, one spouse not a Protestant, or insufficient residence in a city of 25,000 or over. Moreover, even though the directory in Plan 1 was fairly recent, more time would be lost than with Plan 2 in finding couples who had moved within the City. According to tests of Plan 2 the interviewers would call on few ineligible couples—only those for whom the information on the short survey schedules was incorrect to a certain degree.[18]

An important advantage of Plan 2 was the fact that the information available from the Survey would add greatly to the store of knowledge about the variations in fertility between the main

[18] For various reasons, however, the proportion of such couples actually was 15.1 per cent, considerably larger than was anticipated. It is estimated that the number of couples apparently eligible on the basis of the survey schedule entries should be increased by approximately 6.7 per cent to allow for those apparently ineligible but actually eligible. *See* Whelpton, P. K. and Kiser, Clyde V.: Social and Psychological Factors Affecting Fertility. III. The Completeness and Accuracy of the Household Survey of Indianapolis. The Milbank Memorial Fund *Quarterly*, July, 1945, xxiii, No. 3, pp. 254-296. (Reprint, pp. 95-137.)

religious groups—Protestant, Catholic, and Jewish—when allowance was made for variation in highest grade of school completed by husband and wife, in socio-economic status as measured by tenure and monthly rent or rental value of home, and in various demographic factors (nativity, age, and duration of marriage).[19] Plan 2 finally was adopted resulting in the Household Survey of Indianapolis.

Experience gained during the testing of schedules showed that the house-to-house canvassing for the Survey could be done by relatively inexperienced people but that the intensive Study would require skilled and carefully trained interviewers. The Household Survey was begun March 1, 1941 with seven persons who were given a few hours of training on procedure and schedule content[20] by Mrs. Emily Marks Skolnick, and who worked under her direction. Early in June the group was increased to forty-three, most of the additional persons being college seniors recommended by members of Social Science departments. By the latter part of August 1941, the Survey field work was completed.

The eleven interviewers for the intensive Study were selected from a long list of persons with graduate training in sociology, psychology, or social work, with successful interviewing experience, and with high recommendations for the work to be done.[21] During a two-week period they were given intensive training by Mrs. Martha Sampson Herrick and Mrs. Skolnick. The first part of the training was devoted to a study of the schedules and instructions, and to the interviewing techniques that had been found helpful

[19] For an analysis of these data see the first two reports dealing with the Survey: I. Differential Fertility Among 41,498 Native-White Couples in Indianapolis, and II. Variations in the Size of Completed Families of 6,551 Native-White Couples in Indianapolis. The Milbank Memorial Fund *Quarterly*, July, 1943, xxi, No. 3, pp. 221-280 (Reprint, pp. 1-60), and January, 1944, xxii, No. 1, pp. 72-105 (Reprint, pp. 61-94).

[20] The short schedule used in the Survey is reproduced on page 222 (reprint p. 2), of the first report. *See* footnote 19 above.

[21] The interviewers were: Mary M. Aikin, Miriam Bintz, Frances N. Butts, Margaret Creviston, Gettrude D. Davis, Vida Davison, Dorothy McMillin Gross, Helen Jennings, Margaret A. McConnell, Ruth G. Moss, and Virginia Kahn White.

during the schedule testing. Visits were made to the Indiana University Medical Center, where talks were given by Dr. Carl P. Huber on gynecological problems that might be encountered, particularly with respect to sterility and complications of pregnancy and childbirth. Similarly, time was spent at the Maternal Health Center, where types of contraceptives and techniques of using them were explained. In the next step in training, the supervisors filled out schedules for selected couples in the presence of the trainees. Finally, the trainees, themselves, called on, and filled out schedules independently for, couples who were primed to present certain types of problems. These schedules were checked and criticized by the supervisors. Actual interviewing began on April 15, 1941, and lasted until January 31, 1942.

In an attempt to keep the refusal rate at a minimum, a committee of influential citizens—the Indianapolis Committee on American Family Life—was organized to sponsor the Study.[22] They agreed to have their names used in connection with publicity material, and to answer inquiries concerning the Study from people who were asked to cooperate but were skeptical as to the wisdom of doing so. In addition, a letter on committee stationery, setting forth in popular terms the purpose of the Study and the reasons why it deserved support, was prepared for use by the interviewers.[23] Altogether, the support of these civic leaders proved most helpful.

[22] Members of the Indianapolis Committee were: Rev. Harry E. Campbell, First Presbyterian Church; Alex E. Gordon, Brotherhood of Locomotive Firemen and Enginemen; Mrs. Benjamin D. Hitz, Public Health Nursing Association; Ralph W. Husted, Council of Social Agencies; Hugh McK. Landon, Fletcher Trust Company; Thurman B. Rice, M.D., Indiana State Board of Health; and Daniel S. Robinson, President, Butler University.

[23] The letter reads as follows:

"Mr. Indianapolis Husband:

"Today, when dictators in many other countries are telling people what they must do and think and feel, the U. S. A. is trying harder than ever to be truly democratic. In order to accomplish this it is necessary to know what typical people think about important matters. At the present time there is a call for information about American Family Life from couples who have been married several years. You and your wife have been chosen as one of the 1000 Indianapolis couples whose opinions it is important to obtain.

"It will be worth much to the city, state, and nation to find out some things about

(Continued on page 409)

To summarize, it is evident from the foregoing that much tedious and undramatic work was involved in the preparation for the Study. In the initial stages it centered on the definition of problems, the formulation of hypotheses, and the development of the research instruments for evaluating them. Decisions regarding the scope of the Study, the type of couples to be included, and the method of locating them necessitated much thought and experimentation. Tentative schedule forms were tested in field trials, revised, retested, and revised several times over before the final forms were printed. Finally, the interviewers were carefully selected, trained, and supervised. Whatever may be the limitations in the techniques used or in the results to be presented in subsequent reports, these efforts should serve to call attention to desirable and undesirable procedures for future studies in this complex field.

American families: their likes and dislikes, their needs, the job at which they work, the kind of people they are, how many children they have, and what they would like to do for their children if they have any. Such information is needed by the public and private agencies which are trying to improve family welfare, and to lessen the financial, psychological, and health difficulties of many married couples and their children. Public concern about these family matters is steadily and rapidly growing.

"Your wife has already given one of our interviewers her opinion on a few questions. Now we would like both of you to fill out a questionnaire which asks about the things mentioned above. You will find it easy to do, for the questions are short and simple, several answers are printed, and you need only to check the one that fits your situation most closely. Our interviewer will ask a few additional questions, but will record your replies herself. Your part can all be done in about an hour. In return for your help, you and your wife will each receive $1.00, and in addition you will have the satisfaction of knowing that you have helped in doing a useful piece of work.

"The information which you give us will be kept strictly confidential. Your answers to our questions will be used like a Gallup poll or 'straw vote.' You will not be asked to sign any papers, neither will your name or any information which might identify you be given to anyone by the person who interviews you. If you have any question concerning our work, call the Council of Social Agencies, for they are familiar with it.

"May we count on you to be one of the 1000 couples who will give the information needed about Indianapolis families?

AMERICAN FAMILY LIFE
P. K. Whelpton
For the Indianapolis Committee"

ANNOTATIONS

AN AMERICAN DILEMMA[1]

MYRDAL'S two-volume AN AMERICAN DILEMMA is the final report of the director of the comprehensive Study of the Negro in American Life, a survey sponsored by the Carnegie Corporation of New York. The report is in several respects a unique study of the Negro in the United States. Departure from convention began when the Carnegie Corporation decided that directorship of the Study should be placed not in the hands of a citizen of this country, white or colored, but in the hands of an outsider. As explained by the late Mr. Keppel in the "Foreword" of the report, "the search [for a director] was limited to countries of high intellectual and scholarly standards but with no background or traditions of imperialism which might lessen the confidence of the Negroes in the United States as to the complete impartiality of the Study and the validity of its findings. Under these limitations, the obvious places to look were Switzerland and the Scandinavian countries, and the search ended in the selection of Dr. Gunnar Myrdal, a scholar who despite his youth had already achieved an international reputation as a social economist, a professor in the University of Stockholm, economic adviser to the Swedish Government, and a member of the Swedish Senate." (pp. vi-vii).

Dr. Myrdal began this work in 1938. Desiring first to get the "feel" of the problem, he spent some months of exploratory travel in Southern States and to Northern industrial centers. In his initial tour of the South he was accompanied by a wise counsellor, Mr. Jackson Davis, but later Myrdal often struck out on his own and made it a point to talk with all sorts of people, white and colored, rich and poor.

The next step, taken in 1939, was the employment of an exceptionally

[1] Myrdal, Gunnar: AN AMERICAN DILEMMA: The Negro Problem and Modern Democracy. New York, Harper & Brothers, 1944, Two Volumes, 1,483 pages, $7.50.

large and able staff of American social scientists, white and colored, for the purpose of assembling and analyzing available factual materials on specific aspects of the Negro problem. The original plan was to have the reports of professional collaborators published as a series of monographs preliminary to the synthesizing report of the director. This plan materialized only partially; but four special reports[3] have been published and the manuscripts of the others have been deposited with the Schomburg Collection in the New York Public Library.

With the mass of data at his disposal, Myrdal, with comparative ease, might simply have written a systematic "findings report," replete with tables and charts. Such a report might well have been the most comprehensive source book on Negro problems in this country. The author, however, conceived his task to be the more difficult and more hazardous one of interpreting the Negro problem in terms of a single thesis.

One might well judge that the author postponed writing until he had developed his central thesis in entirety. For this thesis affords both title and unifying principle for the book. In fact the author seems to believe that in his thesis, stated below, he has found the quintessence of the Negro problem in America:

> The American Negro problem is a problem in the heart of the American. It is there that the interracial tension has its focus. It is there that the decisive struggle goes on. This is the central viewpoint of this treatise. Though our study includes economic, social, and political race relations, at bottom our problem is the moral dilemma of the American —the conflict between his moral valuations on various levels of consciousness and generality. The 'American Dilemma,' referred to in the title of this book, is the ever-raging conflict between, on the one hand, the valuations preserved on the general plane which we shall call the 'American Creed,' where the American thinks, talks, and acts under the influence of high national and Christian precepts, and, on the other hand, the valuations on specific planes of individual and group living, where personal and local interests; economic, social, and sexual jeal-

[3] Herskovits, Melville J.: MYTH OF THE NEGRO PAST. New York, Harper & Brothers, 1941, 374 pp.
Johnson, Charles S.: PATTERNS OF NEGRO SEGREGATION. New York, Harper & Brothers, 1943, 332 pp.
Sterner, Richard: THE NEGRO'S SHARE. New York, Harper & Brothers, 1943, 433 pp.
Klineberg, Otto (Ed.): CHARACTERISTICS OF THE AMERICAN NEGRO. New York, Harper & Brothers, 1944, 400 pp.

> ousies; considerations of community prestige and conformity; group prejudice against particular persons or types of people and all sorts of miscellaneous wants, impulses, and habits dominate his outlook. (p. xliii.)

In line with the above are the author's belief that the "Negro problem" is basically a "white man's" problem and his statement, "we shall in this book have to give *primary* attention to what goes on in the minds of white Americans. . . . When the present investigator started his inquiry, his preconception was that it had to be focused on the Negro people and their peculiarities. . . . But as he proceeded in his studies into the Negro problem, it became increasingly evident that little, if anything, could be scientifically explained in terms of the peculiarities of the Negroes themselves." (p. xlvii.)

The author does not explain the bearing of this changed point of view on the assigned work of his research staff. To the present writer's knowledge there was no outright shift from studies of the Negro to studies of the white man. Furthermore, although the author's change of heart may have led to less use of the materials submitted by the collaborators than would otherwise have been the case, certainly the author did use them abundantly.

The "ideological" and "value premise" aspects of Myrdal's approach constitute the novel or unique features among existing studies of the Negro in America. The book, however, is by no means simply a philosophical treatise. The author comes down to earth in his grips with various aspects of the Negro problem, and separate sections of the book are devoted to such topics as population and migration, economics, politics, justice, social inequality, social stratification, leadership and concerted action, and the Negro community. Thus in the section on economics, the author states:

> In a general way we know why the Negro is poor. As a farmer, he has been kept in a dependent position and has been exploited. He was tied to cotton agriculture where the risks were such that at one time it brought sudden riches to white people but now forces surplus workers, particularly Negroes, to leave the Southern land. As a city worker, he has been kept out of jobs, especially the good ones. He has seldom been allowed to prepare himself adequately for jobs requiring high skill or professional training. Because of residential segregation, he is confined

> to slums to an even greater extent than his low purchasing power makes necessary. He does not share equally with his white fellow citizen in the free services given by the government. (p. 364.)

The author frequently ventures concrete suggestions regarding solutions of specific problems. For example, after discussing the bleak prospects for employment opportunities for Negroes, especially in Southern agriculture, he suggests that a federal employment service, working in close cooperation with private and public institutions, investigate the possibilities of directing some portion of the Negro labor reserves to small Northern cities that now have few or no Negroes. This type of resettlement should in no sense partake of forcing migrants on given communities; it should be rather that of recommending a few especially qualified Negroes for specific job openings in a specific community. The author would purposely refrain from sending more than a small number to any one town, for, as he sees it, an outstanding need is to have an increasing number of localities in which the Negro is appraised on the basis of his individual merits.

As expected, the descriptive pictures painted by Myrdal are dreary and show little hope for substantial improvement of the Negro's lot in the near future. Writing before the marked liberalization of war-time employment of Negroes, the author proved to be somewhat too pessimistic regarding the placement of Negroes in war industries. He was probably right, however, in his prediction that in the postwar period the Negro's status will advance in some respects and recede in others. He does note a gradual diminution of "slave attitudes" toward the Negro among younger generations of the South and believes this process has been hastened by the war and will be continued with further industrialization. In this connection he states: "No Yankee will be tactless enough to mention it, in so many words, and no Southerner can afford to admit it, but *the main thing happening to the South is that it is gradually becoming Americanized.*" (p. 466.)

In his concluding chapter "America Again at the Crossroads" Myrdal resorts to his underlying thesis for an ending note of optimism: "When in this crucial time the international leadership passes to America, the great reason for hope is that this country has a national experience of uniting racial and cultural diversities and a national theory, if not a consistent practice, of freedom and equality for all. What America is

constantly reaching for is democracy at home and abroad. The main trend in its history is the gradual realization of the American Creed." (p. 1021.)

Space limitations preclude a full and just appraisal of this book. If it were widely read by all classes of people the general reactions might range from complete endorsement to complete damnation of the author's point of view. Neither would one expect uniformity of reaction from social scientists regarding matters quite apart from the racial issues, i.e., the basic premises, the methodology, or general interpretation. Odum, for instance, has taken the author to task on several points regarding methodology, but he probably voices the opinion of many in prefacing his discussion "with the assumption that *An American Dilemma,* in its comprehensiveness, in its originality, in its analysis, is the best thing that has been done on the Negro and is likely to be the best for a considerable time to come. To the social scientist and the 'intellectual' planners, publicists, and reformers, the book is a 'must.' "[3]

The Carnegie Corporation may justly feel that its decision to import an outsider for this task has panned out exceedingly well. The chief disadvantage is that the author, skilled as a social engineer in his own country, must leave to others the solution of the problem. When the patient finds a promising doctor he wants to keep him around. He is hardly satisfied with a written diagnosis or even with a prescription.

CLYDE V. KISER

• • •

RACE SUICIDE?[4]

DR. MCCLEARY presents here in brief and simple form most of the more significant results relating to the growth of national populations arrived at by study in this field during the past several decades. He understands well the meaning of these facts and does not misuse them for his particular purpose as so often happens when laymen use such materials, nor has he let personal bias lead him astray in his interpretations although he has a thesis to support.

[3] Odum, Howard W.: Problem and Methodology in An American Dilemma (a review). *Social Forces,* October, 1944, xxiii, No. 1, p. 95.

[4] McCleary, G. F.: RACE SUICIDE? London, George Allen and Unwin Ltd., 1945, 126 pp. 6s.

His purpose in this book is to convince the reader of the need of raising the birth rate in Western nations, particularly in Great Britain, if these peoples are not to become a relatively less significant part of mankind. Naturally in a book of this size and limited objective he does not discuss many political, social, and economic problems involved in maintaining even the present population in Great Britain or any of the other countries of Western Europe. The tendency of the lay reader will probably be to say: All right, you have shown that we are going to decline in numbers in the not distant future! So what? Why need we concern ourselves with such matters?

In order to convince the mass of the people that this situation requires individual personal action if it is to be changed, it will be necessary to convince them that larger families have a value to them personally which is much greater than that now attached to them. The weakness of this book is that it does not really attack this problem which, in the opinion of the reviewer, lies at the root of the matter. As an instructed and much interested layman Dr. McCleary might have been expected to suggest what the values attaching to families large enough to maintain the population are, both those which would accrue to the individual and those which pertain to the maintenance of the national group and its culture. He has limited his suggestions to those values which attach to being a member of a national group with a definite culture, he has not indicated the personal values which might be achieved in large measure within the family and the small community, where alone the maintenance of numbers is now being achieved.

To the reviewer it seems probable that this failure to appreciate the importance of personal values in reproduction proceeds from Dr. McCleary's lack of interest in one very important result of modern population study, *viz.,* in the wide difference in birth rates of city and country people. This difference is still large although the birth rate of country people is declining much like that of city people. He does not raise the question of why this is and, of course, offers no suggestion of how the values which still lead rural people to reproduce might be encouraged in those who no longer make their living from the land.

It is no doubt quite true as Dr. McCleary implies that the first step in gaining serious consideration for the revision of attitudes towards the birth rate in the Western lands is to show the consequences in terms of their national existence of following their present *laissez faire* policy

and thus to convince the people that they must adopt some definite population policy. But when this is done it remains to choose between policies and then to put the one chosen into effect. Both the choice of policy and the means of effecting it must in the long run come from the informed public in any democratic system. We do not know whether child allowances and public health work and subsidized housing and marriage loans and other devices now being tried out in various countries can effect a higher birth rate. Dr. McCleary recognizes this and the tone of his plea is not too hopeful. But he is undoubtedly right in urging that as a first step we gather more information and make the facts known since this is the only way in which we can develop democratic opinion on a matter of high policy. What he does not seem to recognize is that in a democratic culture the mere spread of knowledge and discussion is not likely to effect any considerable change in personal attitudes towards raising three or four, instead of one or two, children unless the mass of the people are shown where they will get some personal return, psychical as well as economic, out of their families. I do not question that economic conditions play an important role in the moulding of personal attitudes towards the size of one's family but I do not believe that economic values are the only values which determine our conduct in the matter of raising children. Dr. McCleary's discussion adds almost nothing to our understanding of these other values.

In spite of this shortcoming I would like to see this book widely read. It poses a problem of prime importance to all of us and we shall never make any headway in its solution until we recognize it as a problem and begin to discuss it on the basis of fact.

WARREN S. THOMPSON

INDEX

TO TITLES OF ARTICLES AND AUTHORS IN THE MILBANK MEMORIAL FUND QUARTERLY

VOLUME XXIII · 1945

AMERICAN DILEMMA, AN (Annotation) —*Kiser:* No. 4, p. 410.

BARANOVSKY, ANNE *(With Jean Downes)* —*Experiment in Nutrition Teaching by Public Health Nurses, An:* No. 3, p. 227.

BERRY, KATHARINE *(With Dorothy G. Wiehl)*—*Medical Evaluation of Nutritional Status: XVI. Essential Nutrients in Diets of High School Students According to Sex and Age and for Different Cultural Groups in New York City:* No. 4, p. 353.

BORSOOK, HENRY—*Nutritional Status of Aircraft Workers in Southern California: III. Effects of Vitamin Supplementation on Absenteeism, Turnover, and Personnel Ratings:* No. 2, p. 113.

BURKE, BERTHA S.—*Nutrition—Its Place in Our Prenatal Care Programs:* No. 1, p. 54.

BURRITT, BAILEY B.—*More Adequate Provision and Better Integration of Community Facilities:* No. 1, p. 28.

CRUTCHFIELD, W. E. JR.—*Improvement in Nutrition as Protection Against Industrial Toxicity, The:* No. 1, p. 97.

CURRAN, JEAN ALONZO—*Provision of Better Medical Care:* No. 1, p. 7.

DOWNES, JEAN *(With Anne Baranovsky) Experiment in Nutrition Teaching by Public Health Nurses, An:* No. 3, p. 227.

EDWARDS, H. R.—*Income and Food Expenditures of Tuberculous Households in Wartime* (Annotation): No. 2, p. 197.

EFFECTS OF HARD PHYSICAL WORK UPON NUTRITIONAL REQUIREMENTS, THE—*Forbes,* No. 1, p. 89.

EXPERIMENT IN NUTRITION TEACHING BY PUBLIC HEALTH NURSES, AN—*Downes* and *Baranovsky:* No. 3, p. 227.

FAIRCHILD, HENRY PRATT—*World Population in Transition* (Annotation): No. 3, p. 300.

FORBES, W. H.—*Effects of Hard Physical Work Upon Nutritional Requirements, The:* No. 1, p. 89.

GOODHART, ROBERT S.—*Protecting the Health of the Industrial Worker: Nutrition:* No. 1, p. 78; *(With L. B. Pett)* —*War-Time Nutrition Programs for Workers in the United States and Canada, The:* No. 2, p. 161.

IMPORTANCE OF PRENATAL DIET, THE—*Warkany:* No. 1, p. 66.

IMPROVEMENT IN NUTRITION AS PROTECTION AGAINST INDUSTRIAL TOXICITY, THE—*Crutchfield:* No. 1, p. 97.

INCOME AND FOOD EXPENDITURE OF TUBERCULOUS HOUSEHOLDS IN WARTIME (Annotation)—*Edwards:* No. 2, p. 197.

INSULIN SHOCK THERAPY (Annotation)—*Preas:* No. 2, p. 199.

JURKAT, ERNEST *(With Frank W. Notestein)*—*Population Problems of Palestine:* No. 4, p. 307.

KISER, CLYDE V. *(With P. K. Whelpton)*—*Social and Psychological Factors Affecting Fertility: Part III. The Completeness and Accuracy of the Household Survey of Indianapolis:* No. 3, p. 254: *Part IV. Developing the Schedules, and Choosing the Type of Couples and the Area to be Studied:* No. 4, p. 386. *Population Facts and Policies in Great Britain* (Annotation): No. 3, p. 298; *An American Dilemma* (Annotation): No. 4, p. 410.

LENGTH OF LIFE OF PARENTS AND OFFSPRING IN A RURAL COMMUNITY—*Preas:* No. 2, p. 180.

McIsaac Archibald M.—*Postwar Plans of the United Nations* (Annotation): No. 3, p. 297.

Medical Evaluation of Nutritional Status: xvi. Essential Nutrients in Diets of High School Students According to Sex and Age and for Different Cultural Groups in New York City—*Wiehl* and *Berry:* No. 4, p. 353.

More Adequate Provision and Better Integration of Community Facilities—*Burritt:* No. 1, p. 28.

Notestein, Frank W. *(With Ernest Jurkat)—Population Problems of Palestine:* No. 4, p. 307.

Nutrition—Its Place in Our Prenatal Care Programs—*Burke:* No. 1, p. 54.

Nutritional Status of Aircraft Workers in Southern California: iii. Effects of Vitamin Supplementation on Absenteeism, Turnover, and Personnel Ratings—*Borsook:* No. 2, p. 113.

Pett, L. B. *(With Robert S. Goodhart) War-Time Nutrition Programs for Workers in the United States and Canada, The:* No. 2, p. 161.

Population Facts and Policies in Great Britain (Annotation)—*Kiser:* No. 3, p. 298.

Postwar Plans of the United Nations (Annotation)—*McIsaac:* No. 3, p. 297.

Population Problems of Palestine—*Notestein* and *Jurkat:* No. 4, p. 307.

Preas, Sally—*Length of Life of Parents and Offspring in a Rural Community:* No. 2, p. 180; *Insulin Shock Therapy* (Annotation): No. 2, p. 199.

Program of Preventive Medicine for the Individual, A—*Roemer:* No. 3, p. 209.

Proper Attention to the Role of Emotional and Social Factors in Illness as a New Step in Public Health—*Robinson:* No. 1, p. 20.

Protecting the Health of the Industrial Worker: Nutrition—*Goodhart:* No. 1, p. 78.

Provision of Better Medical Care—*Curran:* No. 1, p. 7.

Race Suicide? (Annotation)—*Thompson:* No. 4, p. 414.

Robinson, G. Canby—*Proper Attention to the Role of Emotional and Social Factors in Illness as a New Step in Public Health:* No. 1, p. 20.

Roemer, Milton I.—*Program of Preventive Medicine for the Individual, A:* No. 3, p. 209.

Role of Nutrition in Preventive Medicine, The—*Tisdall:* No. 1, p. 39.

Social and Psychological Factors Affecting Fertility: Part iii. The Completeness and Accuracy of the Household Survey of Indianapolis—*Whelpton* and *Kiser:* No. 3, p. 254; Part iv. Developing the Schedules, and Choosing the Type of Couples and the Area to be Studied—*Whelpton* and *Kiser:* No. 4, p. 386.

Thompson, Warren S.—*Race Suicide?* (Annotation): No. 4, p. 414.

Tisdall, Frederick F.—*Role of Nutrition in Preventive Medicine, The:* No. 1, p. 39.

Vaccination Against Tuberculosis (Annotation)—*Zwerling:* No. 2, p. 201.

Warkany, Josef—*Importance of Prenatal Diet, The:* No. 1, p. 66.

War-Time Nutrition Programs for Workers in the United States and Canada, The—*Goodhart* and *Pett:* No. 2, p. 161.

Whelpton, P. K. *(With Clyde V. Kiser)—Social and Psychological Factors Affecting Fertility: Part III. The Completeness and Accuracy of the Household Survey of Indianapolis:* No. 3, p. 254; *Part IV. Developing the Schedules, and Choosing the Type of Couples and the Area to be Studied:* No. 4, p. 386.

Wiehl, Dorothy G. *(With Katharine Berry)—Medical Evaluation of Nutritional Status: XVI. Essential Nutrients in Diets of High School Students According to Sex and Age and for Different Cultural Groups in New York City:* No. 4, p. 353.

World Population in Transition (Annotation)—*Fairchild:* No. 3, p. 300.

Zwerling, Ruth—*Vaccination Against Tuberculosis* (Annotation): No. 2, p. 201.